important seral species will be reproduced. Only tree species which can reproduce in the shade can survive in an uneven-aged forest. These are usually climax species and on the Flathead National Forest they are grand fir, hemlock, and alpine fir. These species are of lower commercial value than seral species (Antos and Shearer, 1980).

Uneven-aged silviculture results in stand structure and species composition that predisposes the stand to fire and insect/disease losses. The climate of the Flathead National Forest produces good vegetative growth, but it is a poor environment for plant decomposition. Vegetative growth is approximately double the amount the environment is capable of decomposing each year. The result is a net gain in biomass on an average acre of forest ground with an energy equivalent to 300 gallons of gasoline (Beaufait, 1971). Developing continuous canopy uneven-aged stand structures of tolerant species which are very susceptible to fire offers little opportunity to apply prescribed fire to deal with the fuel buildup. When fire cannot be applied periodically in these ecosystems, the area is predisposed to more catastrophic natural wildfires. These same kind of stands offer near optimum environments for some major insect and disease pests such as tussock moth, spruce budworm, and various root rots (Stoszek and Mika, 1978, Fanss and Pierce, 1969). These problems are avoided in even-aged management.

Uneven-aged silviculture requires frequent logging entries (Hahn and Bare, 1979). Logging activity is disturbing to important Flathead National Forest wildlife species such as grizzly bear, gray wolf, and elk (Zager, 1980, Brown, et al, 1980). Frequent logging entries also increases logging damage to residual trees which increases the potential for infection from disease organisms. The Flathead National Forest has approximately 230,000 acres which are subject to soil compaction by logging equipment. These areas would be difficult to protect under frequent entries. Even-aged management tends to minimize these types of problems.

These are some of the primary reasons why a relatively small part of the Flathead National Forest was found to be suitable for uneven-aged management as required by the Northern Regional Guide Criteria.

The ecological limitations of uneven-aged silviculture were identified by the Interdisciplinary Team in the process of preparing standards for vegetative management practices and reasons for their choice for each vegetative type as documented in "Habitat Type Guidelines" (now incorporated into the Forest Plan as Appendix I). These standards for each vegetative type were adopted as minimum management requirements and they were used to stratify the Forest for analysis, prepare prescriptions, and assign prescriptions for analysis areas. No alternative was developed which featured only uneven-aged silviculture because the ID Team considered uneven-aged management and found it to be inappropriate for the Flathead National Forest as a featured system.

Even-aged silvicultural regeneration methods were found to be appropriate for the majority of the vegetative types on the Flathead National Forest because they produce environments that most native tree and other important vegetation require. Of the even-aged silvicultural methods, clearcutting was determined to be the optimal method on many sites and tree stands because the existing stands do not have tree species composition or vigor needed to successfully apply other methods. High levels of fuel loading, soils that have limited rooting depths making residual trees subject to windthrow, and needs to produce Forest openings or forage are also considerations which often result in clearcutting being the optimum method. Projections of silvicultural methods for alternatives are estimates of the optimal methods necessary to achieve objectives and respond to physical and biological limitations. Additional analysis considering site-specific data is done in project level environmental analysis. Individual stand prescriptions are prepared by certified silviculturists to determine the optimal treatments to actually be applied on the ground.

The environmental consequences of timber harvest depend upon the harvest method used (Smith, 1962).

Uneven-aged silviculture is costly to implement and results in high fuel management costs. Long-term application of uneven-aged management results in reduced tree species diversity because an environment is created that favors the climax tree species of the plant successional stages. Stands composed of climax tree species (such as subalpine fir, grand fir, and hemlock) are generally of relatively low commercial value. Stands composed of these species offer a more optimal environment for insects and disease than do stands composed of mixed seral stage species (such as ponderosa pine, western larch, and western white pine). Uneven-aged silviculture precludes opportunities for use of broadcast burning which would simulate the environmental conditions associated with natural wildfire.

Uneven-aged management maintains vegetative cover for wildlife species and provides opportunities for management of specific wildlife habitats. Uneven-aged silviculture is well suited for areas such as riparian zones where continous tree cover is desired. Browse forage for deer and elk is low in uneven-aged stands (USDA, 1976. Uneven-aged Silviculture and Management in the Western United States). Because uneven-aged management maintains continual tree cover within an area, there is less of an abrupt change in the Forest landscape than under even-aged management.

Even-aged silviculture is cost-effective for timber management. Good opportunities are provided for the economical application of prescribed fire and other cultural treatments designed to maintain insect and disease resistent stands. If proper Forest management practices are not followed, even-aged silviculture can result in the increased risk of soil erosion and degraded water quality because removal of the Forest canopy exposes soil and increases water yield.

The effects of even-aged silviculture are in large part dependent on site-specific conditions and management objectives. For example, clearcutting to open the Forest canopy and allow more sun to reach the ground, in combination with broadcast burning, may produce favorable

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regeneration opportunities on a cool, wet site. On the other hand, on a warm, dry site clearcutting and broadcast burning may increase surface temperature and reduce soil moisture to the point that tree seedlings cannot survive.

Potential adverse impacts associated with clearcutting can be avoided in sensitive areas through the use of shelterwood harvest, another even-aged harvest method. Shelterwood harvest increases the amount of shade on a site during the period of tree regeneration by retaining some tree canopy. Shelterwood harvest also provides opportunities to use prescribed fire and other cultural treatments to maintain species diversity. Shelterwood harvest is somewhat more costly than clearcutting. This method is not suitable for timber harvest in landtypes with soils that limit tree rooting. Windthrow could result if it was used.

Seed tree harvest is another even-aged silviculture method that offers more control of the species and quality of regenerated trees.

Water and Fish - Timber management activities affect water quality and quantity, thereby impacting fish populations in Forest streams and downstream in the Flathead River System (Megahan, 1980, 1975; Coleman, 1953; Troendle and Leaf, 1980). Anticipated off-site (downstream from National Forest System lands) impacts would be primarily associated with sediment.*

Water quality may be adversely impacted in Forest watersheds where timber harvest and site preparation activities are scheduled. Water quality is also affected by construction of skid trails, fire lines, log landings, and access roads (Ibid). These activities expose mineral soil which generally results in soil loss through erosion and eventual introduction of soil as sediment in the streams. Road maintenance disturbs the mineral soil, also resulting in soil loss (Packer and Christensen, 1964; Megahan and Kidd, 1972).**

Water quantity (water yield) is affected through the removal of trees in timber harvest (Troendle and Leaf, 1980; Rice, 1981; Burkham and Dawdy, 1980). The resulting decrease in water used by trees combined with the reduction in water lost through direct evaporation from the crown increases the amount of water that ends up in the streams. Increased water yield causes increased sediment loads to occur in streams, thereby affecting water quality. Water yield increases can also cause higher than normal peak flows which result in channel erosion and degraded water quality.

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* Impacts of National Forest timber management activities in Flathead Lake are related more to the timing and duration of water yield and sediment loading than to actual volume increases. According to The Flathead Drainage 208 Project information, natural flow fluctuations contribute far higher volumes of sediment to the lake than Forest management activities could (see Flathead Forest planning records). Water yield increases at other than normal peak flow periods or increases greatly in excess of average peak flows could increase channel cutting in the Flathead River, resulting in increases in sediment reaching Flathead Lake.

** Soil, as discussed here, is considered sediment.

Water yield increases adversely affect fish populations when the increase in a particular drainage exceeds the ability of the stream channel to contain the flow. Erosion within the upper segments of the stream, combined with deposition of that sediment in the lower segments of the stream, begins to change the stream gradient to a lower gradient than it formerly had. The adjustment process increases the load of sediment and may destroy spawning habitat and desirable pool to riffle ratios (Bjornn, 1974; Ritchie, 1972). Barriers to fish migration can also result from stream degradation.

The Forest-wide Best Management Practices and the State of Montana water quality standards will be used to protect the Forest's watersheds. Analysis of the effects of alternatives on water quality, on a stream by stream basis, has been dropped from the EIS due to a lack of public confidence in the analysis methodology used in the draft, and the project level detail required. The most meaningful comparisons, as recommended by the State of Montana and others, are based on program activity levels as shown in Table II-15. Project level analyses will be used to minimize risk of water quality degradation due to increased water yields. Under all alternatives, however, water quality in localized areas would have some risk due to the timber harvest and road building activities. Alternatives with low timber volumes and few miles of new road construction retain the highest water quality over time.

Management activities associated with the alternatives generally do not affect lake and wilderness stream fish populations. In nonwilderness streams, bull trout and migratory cutthroat trout, Flathead Forest's indicator fish species, are most sensitive to increases in sediment and would be most affected by Forest management activities that require ground disturbance.

Timber related effects on water and fish, in Alternatives 10, 11, 12, and 13 are not significantly changed from comparable alternatives without wilderness. This is because the potentially suitable acres included in additions to the wilderness system did not have scheduled timber harvest in Decade 1.

Alternatives 9, 14, 15, and 16 would cause acres scheduled for harvest to be reduced to a smaller number than those scheduled in comparable alternatives without wilderness. This intensifies impacts on the small areas and increases risk to water and fish resources. Although activity is increased, potential negative effects are offset through reduced road building schedules (see Figure II-12). The significance of the estimated effects is relatively small as indicated by the comparative methodology to predict fish potential in Figure II-7. The models used to compute fish numbers have unknown statistical parameters. The projections are not meant to be predictions of actual populations as the purpose is for relative comparisons only.

In some alternatives, populations of fish indicator species increase from existing numbers in nonwilderness streams and then decrease. Alternatives with low to moderate levels of timber harvest and high levels of funding for fisheries habitat improvement, have the largest trout populations remaining after the fifth decade. Under Alternatives 2, 4, 6, and Current Direction, trout numbers would decline below existing population levels by the fifth decade. Alternative 17 projects increasing fish populations over existing levels, then a decline, but Decade 5 populations still higher than current levels.

It is unlikely that other fish species would be affected in the same way that trout populations are. In some instances, many species would thrive and even increase. This could result from the alternatives having little effect on these species' habitat requirements and from reduced competition for food and space by the trout population.

Recreation - The primary impact of timber management on dispersed recreation is due to harvest activities and access, altering recreational settings and opportunities. Under all alternatives, some existing roadless recreation settings will be changed over time to roaded settings. Some alternatives, such as Alternatives 4, 6, and Current Direction, would alter more areas than others. The Preferred Alterantive projects timber activities in less than 5 percent of inventoried roadless areas in Decade 1.

Timber access roads provide increased recreational opportunities associated with a roaded environment while precluding opportunities dependent on an unroaded environment.

All developed recreation sites are classified as unsuitable for timber. The effects of timber on developed sites are primarily on visual quality of the areas viewed from the site.

Roadless Resource - Where the management emphasis involves scheduled timber harvest, wilderness attributes will be affected to the extent that vegetation patterns and/or landforms are modified by harvest or road building activities. Very little of the tentatively suitable timber acres included in roadless areas were scheduled for harvest in the first decade under the original alternatives, primarily due to economics. As a result, alternatives which manage the roadless areas as wilderness have little effect on Decade 1 harvest and conversely, little of the roadless areas or their wilderness attributes would be developed or changed in Decade 1 due to a designation involving timber harvest.

Because a relatively small percent of the Forest's roadless areas are capable of commercial timber management, the majority of the roadless resource and wilderness attributes would be retained even in the long term (See Table IV-2). Timber designations generally affect only the lower elevation fringes of roadless areas which usually have large core areas of alpine ridges not capable of commercial timber production. The exception is the Mt. Hefty roadless area which has a sizable block of potentially suitable timberland. The timber harvest originally projected in this area in Decade 1 is relocated to other suitable analysis areas in Alternatives 11-13, and the entire area is removed from the suitable timber base in the Preferred Alternative (Alternative 17). Thus, no harvest is being scheduled in the proposed Trail Creek Grizzly Bear Management Area. Additional detail regarding how timber designation would affect each roadless area for each alternative can be found in Appendix C.

Riparian Management - In all alternatives, existing damage to watershed and fisheries productivity is corrected where practical. Any management option for riparian areas complies with the NFMA regulations, requiring protection of the riparian environment. Alternatives provide either for riparian management with scheduled timber harvest used to achieve wildlife and fish habitat management objectives or riparian management without scheduled timber harvest, again emphasizing fish and wildlife habitat objectives. Table IV-15 summarizes the riparian designatious by alternative. All alternatives project increases in fish habitat improvement, watershed rehabilitation, and water monitoring over past accomplishments. Under Current Direction, timber management activities continue in riparian areas; however, funding would have to be increased above current levels.

Alternative 17 increased all riparian designations by about one-third compared to the draft in order to correct computational errors in estimating the number of riparian acres needing protection. Additional emphasis has been given to analysis and mapping of riparian areas in the Preferred Alternative to validate the estimates.

TABLE IV-15 Riparian Designation (Percent of Total) - Flathead National Forest

Alternative	Riparian--Wildlife*	Riparian--Timber**	Riparian--Wilderness***
1	100	0	0
2	44	56	0
3	78	22	0
4	100	0	0
5	100	0	0
6	100	0	0
7(CD)	16	84	0
8	78	22	0
9	96	0	4
10	99	0	1
11	77	22	1
12	78	22	0
13	77	22	1
14	76	22	2
15	75	18	7
16	96	0	4
17PA	76	22	2
DEP	76	22	2
PNV	100	0	0
TIMBER	11	89	0

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* Riparian--Wildlife management objectives maintain at least 80 percent of the riparian area in old growth at all times. Timber is unscheduled (unregulated) and harvested only to improve riparian wildlife values.

** Riparian--Timber management objectives maintain at least 20 percent of the riparian area in old growth at all times. Timber harvest is scheduled (regulated), with a 200-year rotation and 20 years cutting cycles. Average size of even-aged cutting units will be 2 acres or less.

*** Previously designated as either Riparian Wildlife or Riparian Timber, now recommended for wilderness.

Wildlife - Manipulation of Forest vegetation through timber management activities directly impacts animal communities. Altering the availability of certain habitats will affect species which are dependent on it. Therefore, over time, as the availability of certain timber condition classes change, the diversity and abundance of wildlife species will change.*

Under all alternatives, habitat to support the snag cavity dependent and old-growth dependent wildlife species would be reduced from current levels. Habitat to support general Forest user and shrub user species would increase.

a. Nongame - Old-growth habitat dependent species are most sensitive to timber management activities (Hensler, 1981-82). Although total acres of old-growth habitat would be reduced (see Table IV-11), old-growth habitat appears to be well distributed and adequate to support viable populations under all alternatives (Flathead National Forest planning records). Old growth would be provided in riparian areas under all alternatives. Also, old-growth habitat would be provided in areas not available or not suitable for timber harvest (such as in areas managed to provide dispersed recreation opportunities, amenity values, grizzly habitat, Wild and Scenic River Management, Jewel Basin Hiking Area, minimum management, and in wildernesses).

Indicator species have also been identified for those species: (1) classified as endangered or threatened by the Endangered Species Act; (2) commonly hunted, fished, or trapped; and/or (3) that show the effects of management on major biological communities. Whitetailed deer, Rocky Mountain elk, grizzly bear, gray wolf, peregine falcon, bald eagle, bull trout, and cutthroat trout are representatives of these categories.

Old-growth dependent species, exemplified by the pileated woodpecker, are believed to be the group most likely to be adversely impacted by Forest management activities. Of the total Forest area, lands under 5,000 feet in elevation are most important to old-growth dependent species, particularly for breeding and the rearing of young. Table IV-16 displays the acres of Forest land outside designated wilderness and under 5,000 feet in elevation that

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* No adjustments were made concerning the possible adaptability of the various wildlife species for a particular vegetative classification. For example, some species that find their optimum habitat requirements in young sawtimber may adapt to mature sawtimber or pole timber habitat.

TABLE IV-16 Acres and Percentage of Forest Land Below 5000' Elevation Providing Old Growth or Potential Old Growth - Flathead National Forest

Alt.	Acres Outside Wilderness by Ranger District: Swan Lake	H. Horse-Spotted Bear	Glacier View	Tally Lake	Forest Total	Percent Outside Wilderness*	Percent of all Forest Land**
1	14,221	34,673	19,592	12,656	81,142	13.1	19.6
2	10,065	21,109	12,937	7,742	51,855	8.4	15.2
3	10,541	22,728	14,641	13,239	61,149	9.9	16.6
4	13,217	29,199	14,184	14,601	71,201	11.5	18.1
5	42,426	29,257	16,737	14,097	102,517	16.5	22.8
6	10,259	24,769	14,003	13,792	62,823	10.1	16.8
7 CD	5,783	20,203	10,164	12,518	48,668	7.8	14.8
8	11,322	25,470	14,846	12,245	63,883	10.3	17.0
9	13,442	34,015	17,461	14,476	79,394	12.8	19.3
10	42,698	29,848	16,737	14,097	103,380	16.7	22.9
11	11,390	25,470	14,846	12,245	63,951	10.3	17.0
12	11,390	25,486	14,846	12,245	63,967	10.3	17.0
13	11,390	26,331	14,846	12,245	64,812	10.5	17.1
14	11,390	26,331	15,835	12,245	65,801	10.6	17.3
15	11,390	26,358	15,835	12,245	65,828	10.6	17.3
16	14,289	36,898	20,754	12,656	84,597	13.7	20.1
17 PA	21,482	30,885	47,910	24,326	124,603	20.1	26.1
17 (Dep.)	21,482	30,885	47,910	24,326	124,603	20.1	26.1
MINLVL	N/A	N/A	N/A	N/A	620,000	100.0	100.0
PNV	10,247	24,650	14,003	13,665	62,565	10.1	16.8
TIMBER	N/A	N/A	N/A	N/A	26,600	4.3	11.4

* Based on 620,000 acres on the Forest outside designated wildernesses below 5000' elevation.
** Based on 50,000 acres additional old growth (total area) location in designated wildernesses below 5000' elevation.

contribute to or provide potential habitat for old-growth dependent species. Variations between alternatives reflect the varying acres where timber management would occur. Table IV-16 also relates the acres contributing to potential old-growth habitat to total acres of suitable Forest land below 5,000 feet in elevation outside wilderness and to total Forest (both wilderness and nonwilderness) below 5,000 feet in elevation. Under Alternative 17 (Preferred Alternative), the greatest amount of potential habitat for old-growth dependent species is available, while Current Direction provides the least. Most of the increase in old-growth potential in Alternative 17 compared to the draft results from increasing riparian designations and removing the Trail Creek Grizzly Management Area from the suitable timber base.

b. Big Game - In addition to timber harvest, habitat is impacted by the distribution and scheduling of timber management activities. Increased roaded access and timber harvest activities can reduce security. If wildlife objectives are of high priority, the security of animals on winter ranges is protected. On potential winter ranges, however, where timber management objectives take precedence over wildlife, the security of big game utilizing those winter ranges is relatively low. Alternative 5 provides the most security to animals on winter ranges, because 98 percent of the potential winter ranges are managed to meet big-game objectives. Alternative 6 provides the least security, because timber management objectives take precedence on the majority of winter ranges.

Timber management activities adversely affect big game if there is not enough forage or if forage cannot be used because cover is inadequate.

Intensive timber management on critical elk summer range would make those areas less effective habitat as security is disrupted and cover removed. The greatest potential for conflict exists on the Tally Lake Ranger District where the majority of elk summer range is suitable for timber management. There are very few elk on this District, however, and the Forest's potential winter range acreage is small, limiting opportunities to increase the population. The Preferred Alternative does not feature elk habitat on the Tally Lake Ranger District, but instead emphasizes moose and deer. Elk production is emphasized on other districts.

On suitable lands that are potentially capable of producing winter forage, timber harvest can improve the level of forage production and provide the optimum relationship of tree cover to forage areas (Lyon, 1975-79; Thomas, 1979). Timber harvest to improve big-game winter ranges will be designed and scheduled to meet wildlife objectives. Timber inventory constraints requiring tree stands to be left as cover and constraining the size of tree openings are used to maintain desired production of utilizable forage. On whitetailed deer winter range, additional constraints specify desirable timber age class distribution and desirable tree species.

Alternative 6 provides the least benefits to big game, in part because timber harvest would occur on potential winter range without the constraints that assure proper cover to forage relationships. The amount of utilizable forage produced is low. High levels of timber harvest would impact summer range. Alternatives 2, 3, 5, 8, 10-15, and the Preferred Alternative would provide for increased winter range forage. After evaluating public comment on the Draft, Alternative 17 provides increased winter range emphasis in the Firefighter Mountain area of Hungry Horse Ranger District and the lower slopes of the Swan Range on the Swan Lake Ranger District. Whitetailed deer winter range was increased on the Tally Lake Ranger District.

Under all alternatives, utilizable forage on winter ranges managed to meet objectives increases over time as the timber age class distribution approaches a more favorable cover to forage relationship.

c. Threatened and Endangered Species - Of primary concern is the reduction in security from human disturbances resulting from timber harvest activities, road construction, and road management.

Alternatives with large suitable land bases and high objectives for commodity production, such as Alternatives 2, 4, and 6, would have the most acres with potential adverse impacts on grizzly bear and gray wolf security and habitat components.

A restrictive road management program helps mitigate the adverse effects of timber management. Alternatives 1, 5, 10, 16, and 17 would best be able to mitigate timber harvest impacts through motorized access restrictions. Alternative 6 would use access restrictions the least.

Designated wilderness areas, the Trail Creek Grizzly Bear Management Area, and roadless areas would provide security from development and disturbance, partially mitigating the impacts of timber harvest in other areas of the Forest.

Timber management can be used to create favorable quality, quantity, and distribution of forage areas for grizzly bears (Zager, 1980). Unless carefully designed and scheduled with restricted road access, however, timber management adversely impacts the habitat used by grizzly bears and gray wolves (Jonkel, 1975; Ream, 1978). In addition, timber management can alter habitat components, making them less desirable for grizzly bears or gray wolf.

In some alternatives, the adverse impacts of the Forest's timber management program would be partially mitigated through the grizzly bear management areas. These alternatives use carefully designed timber harvest and prescribed burns in highly productive grizzly bear habitat to maintain or improve its condition. After evaluating public comments, Alternative 17 does not use scheduled timber harvest in the Trail Creek Grizzly Management Area as was projected in the Draft.

Cultural Resources - Timber management, in that it requires ground disturbing activities, provides the impetus for the cultural resources management program. Under all alternatives, cultural resource inventories will be conducted prior to any project activity. Most prehistoric and historic sites are located in the process of conducting project inventories.

Inventories are done because timber harvest activities have the potential to disturb and destroy cultural resources (McLean, 1981). In spite of the use of state-of-the-art methods by the Forest archeologist, some prehistoric or historic sites could be lost under any alternative as a result of timber management. Methods and technology are not sufficient to assure location of all sites, especially subsurface sites, in a Forest environment.

Generally, under all alternatives, project activities are modified if a site is located, to avoid adversely affecting the cultural resource.

Visual Quality - The type, arrangement, size, shape, timing, and scheduling of timber management activities determine how close to natural appearing the form, line, color, and texture of the landscape can be maintained. The degree to which the natural appearance of the landscape can be altered is defined by standards and guidelines associated with the visual quality objectives for the area. Alternatives which would have large acreages designated as modification or maximum modification visual quality objectives would have the landscapes dominated by timber management activities. On the other hand, alternatives with high levels of retention and partial retention acres would result in more natural appearing landscapes in areas frequently viewed by area residents and Forest visitors. Table IV-7 summarizes the acres where timber harvest would be constrained by visual quality objectives for each alternative.

Social and Economic - For the vast majority of area residents, timber is a renewable resource with multiple-uses (Giannettino, 1981). Controversy arises on the types of harvest and activities that can ensure the renewability of the timber resource and adequate protection for other resources. Some people would prefer that timber management levels be determined after other significant resources are protected, such as would occur under Alternatives 1, 5, 10, and 16. Other people believe that timber harvest should be of primary importance and impacts on other resources should be mitigated to the extent possible, such as would occur under Alternatives 4 and 6.

Use of the timber resource as firewood most directly involves the greatest number of area residents in the Forest's timber management activities. A study conducted for the State Department of Natural Resources and Conservation indicates that 45 percent of the Flathead County population uses wood as a source of home heating. Firewood permits issued by the Flathead National Forest have increased significantly in the last few years. Recent data (FY 83) indicates fuelwood use may be about 20 MMBF annually. Fees are now charged for personal use firewood permits. Additional controls may be needed in the future if conflict between personal use, firewood, and commerical timber sales continue to grow. Alternatives 2, 4, and 6, with the largest suitable land bases, high timber harvest volumes, and unrestricted road access, provide the most opportunities for firewood gathering.

Timber receipts make up the largest portion of receipts to the U.S. Treasury and Returns to the State generated by Flathead National Forest management (see Figures II-17 and II-15, respectively). Those alternatives which provide the most timber volume show, as expected, higher returns to the State.

Alternatives which change the amount of timber harvested from past harvest levels (about 130 MMBF for the period 1971 to 1980) may have the potential to change employment, income, and lifestyles of the local communities. Whether changes occur as a result of the Forest's programed timber sale program is dependent on other factors such as amount of cutting on private industrial forest lands, interest rates, or foreign timber supplies.

The level of timber harvest is important not only in providing jobs in the timber industry, but also through indirect and induced impacts in other industrial sectors as well. This is illustrated in Table IV-17 which shows the significance of a timber harvest program of 100 MMBF on the three county area of influence (Flathead, Lake, and Missoula Counties).

TABLE IV-17 Impacts of 100 MMBF Timber Program on the Area of Influence Flathead National Forest

Sector	Total Income (MM$)	Employment (Number of Jobs)
Miscellaneous Agriculture	.1559	22
Meat Animals, Misc. Livestock	.0178	4
Maintenance and Repair	.4854	18
Miscellaneous Manufacturing	.2695	14
Food and Kindred Products	.1915	13
Logging and Sawmills	6.0200	392
Other Wood Products	.2243	21
Veneer and Plywood	2.3045	155
Pulp, Paper, and Paperboard	2.0457	107
Transportation and Communication	1.4829	88
Wholesale and Retail Trade	2.7873	289
Insurance and Real Estate	.6768	53
Hotels and Lodging Places	.0800	18
Miscellaneous Services	1.9886	222
Eating and Drinking Places	.5238	76
Government Enterprises	.1699	11
Scrap, Used, and Secondhand	.0000	00
TOTAL	19.4251	1505

About 1500 jobs are created for every 100 MMBF harvested, or 15 jobs for every one million board feet. On an average, each job is worth $12,910 (in 1978 dollars). There are 675 direct jobs created by every 100 MMBF harvest, or 6.8 jobs for every MMBF harvested. This is calcuated in the above table using employment from the sectors of logging and sawmills; other wood products; veneer and plywood; and pulp, paper, and paper board.

The timber produced by the Forest is the most important aspect of the Forest's contribution to local employment and personal income. Generally, those alternatives producing the higher timber volumes (Alternatives 6 and Current Direction, for example) show higher employment opportunities. Although Alternatives 1, 4, 5, 10, and 16 show decreases in employment from the existing situation, these alternatives do eventually increase over time, as all the alternatives do, because timber harvest levels increase. Alternatives 2 and 6, while favorably affecting timber related employment, adversely impacts recreation (including hunting and fishing) industry employment.

Soils - Timber management and associated support activities affect the soil resource which in turn affects the further growth of trees (Lull, 1959; Bates, 1981; Cullen and Montagne, 1981). Harvest and site preparation activities and road construction contribute to a degree to soil degradation through erosion, soil compaction, and organic matter loss (Froehlich, 1979).

The potential for impacting soils is directly related to the level of scheduled timber harvest for each alternative. Alternative 6 would have the highest potential for soil degradation and decreased soil productivity while Alternatives 1 and 5 would have the least potential for adverse impacts occurring to the soil resource. Under all alternatives, Forest-wide standards designed to insure long-term soil productivity would be implemented. These standards provide for minimizing and mitigation of possible impacts.

Intermediate Harvest - Intermediate harvests include commercial thinning and sanitation/salvage harvest scheduled in tree stands prior to the regeneration harvest. Intermediate harvests are scheduled for stands managed with moderate or high intensity only (Flathead planning records). The intermediate harvests scheduled reflect high timber production objectives in the first decade and/or the overall schedule of activities necessary to maximize PNV of the Forest.

Approximately 2,000 acres of intermediate harvest in existing timber stands are scheduled in each year of the first decade under most alternatives. Under all alternatives, acres of intermediate harvest would increase over time as regenerated stands are usually scheduled for at least one intermediate harvest prior to final harvest. This reflects the economic objective of maximizing the PNV of the Forest through increased timber volume within the 150 years of the planning horizon. Average annual intermediate harvest acres for the first five decades are shown in Table IV-14. Alternative 17 shows a 200-acre per year Decade 1 reduction from the intermediate harvest schedule from the Draft. Sanitation/salvage is the dominate Decade 1 intermediate harvest treatment.

Timber Growth Rate in the Year 2030 - The Chief of the Forest Service, in a letter dated March 30, 1981, requires comparison of the timber in the year 2030 to the growth at long-term sustained yield capacity for the Preferred Alternative. The long-term sustained yield capacity for the Preferred Alternative is 37.2 MMCF per year. The predicted growth rate at 2035 is 36.8 MMCF per year, indicating that, if managed under the Preferred Alternative, the Forest would achieve 99 percent of potential growth by the fifth decade. The Preferred Alternative meets the RPA Statement of Policy for timber growth goals.

Insect and Disease - Timber management provides a primary means of implementing integrated insect and disease management strategies. Alternatives with the largest suitable land bases and highest timber management intensities will derive the greatest benefits in insect and disease management. Benefits include increased access to tree stands for assessment, suppression and/or salvage, and improved variety of tree species (Smith, 1962).

Adverse effects of timber management on insect and disease management are usually minor and of short duration. Adverse effects could include opportunities for increased insect populations in slash resulting from timber harvest (Ibid). Also during intermediate harvest, crop trees could be damaged by logging activity, making them susceptible to diseases (Ibid). These effects would occur under all alternatives.

The effects of timber management on the current epidemic of mountain pine beetle can be described in terms of the acres of lodgepole pine scheduled for harvest in the first decade. Alternatives except 3, 4, 6, and Current Direction provide the level of harvest necessary to salvage the majority of expected tree mortality in the high-risk areas (see Table II-18). Alternative 17 increases the acres and volume of lodgepole pine harvest significantly from that projected in the Draft. Only Alternative 2 would harvest more. This increase results in trading of some PNV in return for increased nonpriced benefits in plant community diversity and protection considerations.

The areas recommended for wilderness under Alternatives 9-16, generally do not include extensive stands of lodgepole pine. Alternatives 9, 10, 14, 15, and 16, however, do contain large areas with the potential to produce lodgepole stands in the Mt. Hefty, Tuchuck areas of the North Fork Flathead River in which mountain pine beetle epidemics could again be a problem. The current mountain pine beetle epidemic has already killed susceptible stands in these areas. Outbreaks of beetles should not be a problem in these areas for 8 to 10 decades.

Fire - Timber management is beneficial from the fire protection standpoint in that timber harvest over time reduces the level and distribution of forest fuels (Beaufait, 1971). Alternatives with large suitable land bases would have the most favorable long-term effect on the fire and fuels management program.

Adverse effects of timber management, however, can be significant. The increased access associated with timber harvest and the logging activities themselves increase the risk of man-caused fire (Smith, 1962). Slash remaining after a timber sale constitutes a fire hazard. Fire in logging slash is more difficult and costly to control than in naturally accumulated fuels. Under all alternatives, timber revenues or capital investment funds are used to reduce or manage activity-related fuels.

Prescribed fires used in site preparation and to reduce forest fuels occasionally escape control and result in resource damages and high suppression costs. The chance of escaped prescribed fire varies for each alternative and is correlated with the number of acres on slopes over 40 percent that must be burned to accomplish site prepatation objectives (see Table IV-14). In the first decade, Alternative 2 and 6 would have the highest risks while Current Direction would have the lowest.

The wilderness alternatives have very minor short-term effects. Most harvest acres that would have to be relocated in Alternatives 9, 14, 15, and 16 would be rescheduled on similar land types. The long-term effect of wilderness alternatives would be to reduce the total acres of steep slopes being managed for timber production. This would have negative effects on management's ability to regulate fuel loads on the area. Positive effects may result by reducing the risk of escaped prescribed fire on steep slopes as a result of timber harvest and slash disposal programs.

The Preferred Alternative will have a beneficial long-term effect on fuels management through a balanced program of cost-effective commercial timber related prescribed burning in suitable timberlands and managed wildfire and prescribed burning in unsuitable timberlands.

Air Quality - Timber management affects air quality in all alternatives. The reduction of forest fuels generated by timber harvest usually involves the use of fire, increasing the smoke and particulate matter released into the atmosphere. Adverse effects on air quality are relatively minor (Komarek, 1970). The adverse effects are primarily to the visual quality and usually are short term. Alternatives which harvest the most acres will generate the most smoke and particulate matter.

Burning to achieve management objectives complies with the State Air Quality Standards. The number of days in which burning can be accomplished without adversely affecting air quality are limited, especially because the number of days with proper burning conditions are limited and the impacts of other land managers on this airshed are significant. Air quality restrictions may prevent accomplishment of all activity fuel treatments scheduled in some years. Smoke management would be handled in a similar manner in all alternatives.

Diversity - A properly implemented timber management program would simulate the natural variety of plant communities for multiple-use purposes (Smith, 1962). Over time, the spacial distribution of tree species and tree age classes would improve over historic and existing conditions. The higher timber management intensities of Current Direction would provide the greatest potential to maintain varied plant communities. Alternative 5, providing for timber management on the fewest acres of all the alternatives, would provide the least opportunity to influence diversity. The Preferred Alternative maintains overall natural diversity using a balanced commercial timber management program with managed wildfires and prescribed burning to maintain natural ecosystem functioning.

Some of the more important mitigation measures dealing with timber management are summarized below:

-- All management activities within riparian areas will be guided by the riparian area standards and guidelines.

-- Effects of increased road access associated with timber management activities on wildlife will be partially mitigated in some alternatives including the Preferred Alternative through restricting public motorized access.

-- Potential impacts of timber management activities on soil productivity are mitigated through standards and guidelines that are specifically designed for each landtype group.

-- Impacts of timber management activities on grizzly bears, gray wolf, big game, and other wildlife will be partially mitigated through restrictions on the timing of timber harvest. Alternatives will be guided by the management objectives and direction of the Flathead National Forest Grizzly Bear and Gray Wolf Management Guidelines.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Although long-term productivity is assured, some alternatives place more emphasis on short-term uses of resources, resulting in higher short-term adverse impacts on the environment. Alternatives 2, 6, and Current Direction, with the highest timber harvest volumes and largest suitable land bases, would result in the most short-term increased sedimentation and water yield, reduced air quality, and decreased hunting and fishing opportunities. Alternatives 10 and 16 with comparatively low levels of resource development would have the lowest potential level of short-term adverse environmental consequences.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Under all alternatives, timber in areas that are not economically accessible may represent an irretrievable commitment of resources since mortality is not salvageable. The commitment is irretrievable rather than irreversible because future technological advances could make harvest of this area possible and feasible.

Timber production under all alternatives increases over time; however, under some alternatives, harvest levels are constrained by water quality or economic efficiency considerations or wilderness designations. The harvest volume lost is irretrievable.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

There will be increases in sedimentation resulting from soil disturbance and increased water yield associated with timber harvest activities.

Short-term reduced air quality from dust, smoke, and automobile emmissions would also result from timber management objectives.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

The projected energy requirements for timber harvest in Decades 1-5 are displayed in Table IV-18.

TABLE IV-18 - Energy Consumption Related to Timber Harvest
(Billion BTUs) - Flathead National Forest

	Decade				
Alternative	1	2	3	4	5
1	8554	10393	12188	13647	15931
2	12221	12584	15308	16643	18679
3	10577	11034	13530	14575	16842
4	5288	9107	15892	18357	18431
5	8626	10396	12156	13570	15810
6	15242	13913	15806	17539	18411
7 CD	13850	12871	17621	14483	16825
8	10140	10648	13089	14188	17780
9	15242	13913	15806	17539	18411
10	8626	10396	12156	13570	15810
11	10141	10874	13361	14482	16498
12	10141	10644	12821	13892	17418
13	10141	10534	12541	13592	16528
14	10141	10644	12087	13002	16868
15	10030	10644	11731	12562	16318
16	7241	8299	9466	10950	12448
17 PA	10308	11092	11576	12357	16060

Y. LOGGING METHODS

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes in this section between draft and final documents.

2. ENVIRONMENTAL CONSEQUENCES

Logging system options include tractor yarding, jammer yarding, skyline systems, and helicopter. The logging system or systems appropriate to specific landtypes were determined with consideration given to mitigation of potential adverse impacts on resources as well as to the economic efficiency of certain systems used on certain landtypes. The FORPLAN computer model compares the economic costs and benefits of alternate systems on each landtype group.

The assumptions made regarding the road needs of the different road requirements for each logging system are as follows (Coefficient Documentation, Flathead Forest planning records):

1. Tractor yarding -- slopes less than 40 percent, average road spacing of 1,000 feet.
2. Jammer yarding -- slopes 40 to 60 percent, average road spacing of 750 feet.
3. Standard skyline yarding -- slopes over 40 percent, average road spacing of 1,000 feet.
4. Long-line skyline yarding -- slopes over 60 percent, average road spacing of 2,000 feet.
5. Aerial yarding -- slopes over 60 percent assumes no additional roads would be constructed.

Table IV-14 displays the average annual first decade acres and volume harvested by each of the five systems under each alternative. Variations in areas harvested by these systems under each alternative are a result of the interaction between the maximum PNV objective function and the resource constraints used by the FORPLAN model.

Alternatives which add to the National Wilderness Preservation System schedule fewer miles of road than comparable alternatives without wilderness. Some tentatively suitable timber acres must be included to formulate viable wilderness alternatives. These roadless timber acres contain a high proportion of steep lands. As a result, alternatives which transfer those lands to wilderness have less long-line cable and helicopter logging scheduled. These logging systems require the fewest miles of roads per square mile. This accounts for the relatively minor change in road miles in relation to the change in suitable acres for the wilderness alternatives.

This disproportionate distribution of cutting if continued has increasingly adverse consequences, especially on nonpriced benefits.

The Analysis of the Management Situation indicated a need to consider change from Current Direction which concentrates timber harvest on tractor ground.

Comparing where timber harvest has occurred with where it must occur in the future in relation to slope class:

	% of Suitable Timberlands	% of 1973-1980 Harvest Acres
Less than 40%	46%	77%
40% to 60% slope:	27%	19%
Over 60% slope:	27%	4%

As a result, alternatives were developed with constraints to better distribute the timber harvest throughout the Forest and over all slope classes. This results in a tradeoff of PNV and cash benefits in return for higher noncash and nonpriced benefits due to reduced adverse environmental effects.

Alternatives 1, 4, 6, and 16 have no aerial logging scheduled in Decade 1 because it was not necessary to achieve these alternatives' objectives. Alternatives 8, 11-15, and 17 have the most aerial logging scheduled in the first decade. This was done to maintain the viability of the system in the local area and provide increased nonpriced benefits such as reduced risk of water quality degradation.

The miles of new road construction and associated costs for the first five decades for each alternative are displayed in Table II-16. Under all alternatives, most of the needed roads would be in place by the fifth decade.

The FORPLAN computer model scheduled miles of road construction in direct proportion to the acres of land on which each logging system would be used in each decade. While the total miles of road construction needed in each alternative is correct as calculated by the FORPLAN model, the miles built per decade had to be manually adjusted to account for additional construction in the earlier decades needed to connect unroaded areas scheduled for harvest to the existing transportation system. This rescheduling of road construction resulted in adjustments to discounted costs and PNV.

a. Tractor Logging

The largest impact on the visual resource involves the soil disturbance and roads associated with logging due to removal of the timber from the site. Logging with tractors causes soil disturbance on about 28 percent of the area. If the soils are light colored, the redistribution of surface layers can be seen from long distances. Tractor logging is generally used on nonsensitive soils less than 40 percent slope.

Tractor yarding has the potential to cause soil compaction, excessive soil disturbance and exposure of soil to wind and water erosion (Megahan 1980, Rice et al. 1972). The Forest has about 229,000 acres of tentatively suitable timberlands subject to soil compaction. Soil compaction is a problem on wet soils, especially those with clay or high silt content. Compaction causes reduced infiltration capacity, air permeability, and productivity (Froelich 1979, Froelich et al. 1980). Soil compaction can cause overland flow, accelerated erosion and stream sedimentation which causes reduced water quality. Forest soils most susceptible to compaction are those with high clay and silt content (Cullen and Montagne 1981). Compaction can be avoided by limiting tractor use to the dry season, requiring a cushion of snow, operating on frozen soils, or use of line skidding to dedicated trails. Skid trails can be located away from problem areas, but even with restrictions, some soil disturbance inevitably occurs when tractors are maneuvered in a logging area. Although all of the above methods will be used to prevent soil compaction, skyline logging was modeled in FORPLAN as an estimate of increased costs of meeting minimum management requirements to prevent compaction on compactible landtypes. The tradeoff in bid value of stumpage between tractor logging and skyline as indicated by actual sales data is about $24 per MBF.

Some silt disturbance is desirable in providing favorable seed bed conditions for regeneration of many tree species (Smith 1962). Most topsoils on the Forest are thin. Excessive displacement or mixing of this topsoil can drastically change the fertility of bared areas. On especially sensitive soils, the number of skid trails can be limited or another logging system can be required. The application of Best Management Practices can reduce this effect to acceptable levels. Tractor logging usually requires more miles of logging road construction than any other logging method. (The effects of roads are discussed elsewhere in this chapter.)

Removal of the organic layers of low-growing vegetation exposes the soil to raindrop splash erosion and overland flow during intense rainstorms (Bethlahmy 1967, Megahan 1980). The excessive removal of the protection plus the compaction causes a decrease in infiltration rate and resulting overland flow can cause rills or gullies. In these situations, the situation is mitigated by applying proper and timely erosion control measures.

Effects on streams and fish populations result from soil disturbance and erosion (Platts 1980). An increased sediment load in streams causes the intergravel areas to become plugged, reduces insect populations and causes fish eggs to smother from lack of circulating water (Phillips 1970, Ritchie 1972). Tractors operating in streams can have a severe impact on the stream channel and cause excessive sedimentation for miles downstream (Bjornn 1974). Tractors are not allowed to operate close to streams and crossings will be carefully planned to utilize temporary culverts or log or snow bridges.

Tractor logging has little effect on big-game cover. The major effect on cover is the removal of trees (Lyons 1979). Forage growth may be stimulated by the scarifications caused by tractors.

Tractor logging is the least expensive method available for moving logs from the stump to the yarding area. This can mean a greater profit to the purchaser or a greater return to the U.S. Treasury and payments to the County.

Recreational disruption and noise of logging operations cause local, short-term degradation to the recreation experience. In alternatives with low timber harvest levels, the disturbance will be minimal because only a few timber sales will be active at any one time. In alternatives with high timber harvest levels, such as Alternative 6, there will be numerous sales, and the recreation value of large segments of the Forest will be lowered.

1.) Short-term Use vs. Maintenance and Enhancement of Long-term Productivity

Tractor yarding is the least expensive method to yard logs. In most cases, tractor logging has little effect on long-term productivity. Under some alternatives, tractor logging may occur on wet soils or on isolated pockets of clay soils. In these cases, soil compaction will occur and affect productivity. In some cases, soil will be lost which may affect the long-term productivity and this soil will lower the water quality and fish habitat of the streams. These water quality effects, however, should be short-lived. Adequate costs are allowed in all alternatives to prevent soil compaction and impairment of long-term productivity.

2.) Irreversible and Irretrievable Commitment of Resources

Logging by tractor does not irreversibly commit the area to tractor logging during the next harvest entry. If, however, the road system is designed to accommodate tractor logging, there is a strong possibility that tractors will be used in the future. The soil lost or unduly disturbed by the tractors constitute an irretrievable loss to the site.

3.) Adverse Effects Which Cannot Be Avoided

Tractor logging leaves skid trails which are unsightly to Forest visitors. These trails will eventually be revegetated or screened from view. During the logging operation, considerable noise and dust is generated by the tractors and soils are disturbed. Excessive soil disturbance is followed by a loss in water quality and perhaps some loss in productivity. Some fish habitat is likely to be disturbed or destroyed.

4.) Conflicts With Other Land Management Plans

None identified.

5.) Energy Requirements

The energy requirements for yarding are included in Table IV-18 above.

b. Cable Logging (includes jammer logging on this Forest)

Cable logging involves dragging the logs along the ground and is rarely used on areas more than 750 feet from the initial landing area. Cable logging is generally used on nonsensitive soils greater than 40 percent. Since logs are dragged along the ground by cable, cable logging has similar effects to tractor logging, but the effect is not as severe because the weight and tread of the tractor is absent and the skid trails are not as wide so less soil is disturbed. Up to 23 percent of the soils are disturbed, depending on the length of the drag and the volume of material removed.

Cable logging does not cause severe soil compaction since the heavy tractor is not used. Since the logs, however, are dragged uphill and the slopes are generally steep, soil erosion and overland flow can occur where the skid trails are deep enough to cause ruts. Erosion control is required for these trails.

In essence, except for intensity, the effects of cable logging are the same as those discussed for tractor logging. Cable logging costs about $7 per MBF more than tractor yarding. The major difference between cable and tractor logging, other than cable being less severe on the specific site, is that cable logging generally requires less miles of road than tractor logging, providing effort are made to yard the maximum distances. The effect of roads are discussed elsewhere.

1.) Short-term Use vs. Maintenance and Enhancement of Long-term Productivity

Cable logging affects long-term productivity less than tractor logging does, because the effects of compaction are not as severe. There is less soil disturbance and less loss of soil, providing proper erosion control measures are carried out. As with tractor logging, cable logging does not enhance productivity.

2.) Irreversible and Irretrievable Commitment of Resources

Cable logging does not commit the area to be logged in the future. Since the road system is in place and considerable money will be spent in generating a new stand, it is likely that the area will be logged by a cable system. The soil lost by the use of the system is irretrievable.

3.) Adverse Effects Which Cannot Be Avoided

Considerable noise and dust are created by cable logging, although it may be less than with tractor logging. Soils will be disturbed, and some will erode into streams, causing a loss of water quality and fish habitat.

4.) Conflicts With Other Land Management Plans

None identified.

5.) Energy Requirements

Energy requirements for cable logging are also included in Table IV-18.

c. Skyline Logging Systems

Skyline logging lifts at least one end of the log off the ground and carries it up to 2,000 feet. The system is used on the slopes greater than 40 percent. Skyline logging has minimal effect on the visual resource, because logs are lightly dragged along the ground and the upper end of the log is usually suspended above the soil . The major disturbance to the soil is at the upper and lower ends of the skyline cable system where the logs are decked. Edges of skyline units can be blended into the uncut Forest with greater ease than jammer systems.

Fewer roads are necessary because external yarding distances are greater than for tractor or jammer systems. Since roads have the longest and most permanent effect on the visual resource, the logging system which requires the least miles of road is the most desirable from a visual resources standpoint on steep ground.

Skyline systems have a low potential for damage to soils except in cable corridors where some dragging of logs is inevitable. This dragging of logs rarely extends for great distances within the corridor. This means that the system has low potential for adverse effects on water quality or fish habitat. Skyline systems which cross streams have the logs fully suspended to avoid, to the extemt possible, disturbance to the stream.

Use of the skyline system increases slash control costs, since the system is inefficient in piling of slash. Hand piling is effective but expensive. Because of the lack of other machinery, firelines are difficult to build and broadcast burning is more costly to control on the usually steep slopes without a good fireline. Since soil disturbance is minimal in skyline yarded sites, fire is often necessary to prepare the soil for planting. The slash must be treated in such a way so that a careful balance can be maintained between exposing mineral soil and loss of control (USDA Forest Service, 1978).

Skyline logging has little effect on forage or cover. Soil disturbance occurs on only about 5 percent of the area which means that forage species are not particularly stimulated. The harvest system and post-logging fire have much more effect on forage and cover than skyline logging in itself.

Where a well-stocked, desirable understory of trees exists, most can usually be saved as the next generation by applying a skyline system. In other cases, since little soil is disturbed, regeneration of tree seedlings can be a problem unless fire is used to provide a proper seedbed.

Skyline logging is more expensive than other systems. Logging costs average about $24 per MBF more than tractor yarding for 1,000 ft. systems, and up to $37 per MBF more for 2,000 ft. systems. This reduces the profit for the logger and may cause a reduction in returns to the Treasury, depending on the price paid for the timber.

Any logging operation causes disruption of recreation traffic on the roads within the active sale area. Interruptions of traffic may be longer for skyline operations than for cable or tractor logging. Equipment is difficult to move and may block the roads for several hours at at time.

1.) Short-term Use vs. Maintenance and Enhancement of Long-term Productivity

Since skyline logging causes less severe environmental consequences than more conventional logging systems, productivity is less affected. Although there is some soil disturbance with skyline logging, less is eroded and water quality is seldom severely lowered. Because of the lack of heavy equipment in the area, the low-growing vegetation is not destroyed. Due to the difficulty in disposing slash, there can be some effect on regeneration such as a delay in reaching maturity for the trees.

2.) Irreversible and Irretrievable Commitment of Resources

Just because the current stand of trees is logged by the skyline system does not mean the next generation will be logged in the same way. The roads are designed, however, to preclude use of conventional systems. Hence, if harvest is assumed for the future generations, some sort of skyline logging or an equivalent system will likely be used. There are no irretrievable commitments of resources.

3.) Adverse Effects Which Cannot Be Avoided

Despite the fact that skyline systems have fewer environmental consequences than more conventional systems, some soil will be lost or displaced, some water quality degradation will occur and some low-growing vegetation will be destroyed. Slash control will be more costly because of the problems with construction of fire lines and piling slash. Since most skyline operations are on steep slopes, the effect on visual quality is readily visible and, in some instances, may be visible for long distances. Recreation opportunities will be degraded while the harvest is occurring, because of noise, dust and equipment in the roads. Since the system is costly, return to the operator and Treasury may be lowered, depending on the sale price of the timber. In order to handle the large equipment, skyline systems generally require wider roads which are more costly and cause greater soil displacement.

4.) Conflicts With Other Land Management Plans

None identified.

5.) Energy Requirements

Table IV-18 also includes energy required for skyline logging.

d. Aerial Logging

On the Forest, the only current aerial system available is the use of helicopters. As with skyline logging, helicopter logging units can be easily blended into the uncut forest. Few roads are needed because external yarding distances are much greater than for conventional systems, including skyline logging. Helicopter logging leaves the soil surface virtually undisturbed except at landings. The landing areas are severely disturbed and often require extensive rehabilitation over the one- to two-acre sites (Megahan 1980). Helicopter logging disturbs less than two percent of the logging area.

Because of the expense involved, helicopter logging is only used on the most sensitive soils on slopes greater than 60 percent. Helicopter yarding averages $107 per MBF more than tractor yarding. Because the timber is lifted clear of the ground, there is virtually no soil disturbance and therefore, erosion and water quality degradation is minimal even on these sensitive soils and steep slopes.

Slash control on helicopter-logged areas is hard to accomplish. No heavy equipment is available to pile the slash or to construct firelines. Hand piling can be applied but this is quite expensive. As with skyline logging, the lack of or expense of slash control and the lack of mineral soil exposure can have significant effect on regeneration (Smith, 1962) and increase the probability of unwanted fire.

There is considerable noise generated by the overflying helicopters. This can have an undesirable effect on recreationists in the area and may affect the distribution and stress of wildlife in the area.

The greatest effect of helicopter logging is the volume of traffic produced on the road away from the landing. Logs are moved very rapidly from the woods to the landing and trucks are usually loaded immediately. Twenty or more truckloads may be hauled from one landing in a day.

1.) Short-term Use vs. Maintenance and Enhancement of Long-term Productivity

Helicopter logging has little effect on long-term productivity due to the fact that little soil is displaced. Problems with slash control and regeneration may slightly lengthen the following rotation, but the productivity of the site will be maintained. Since helicopter logging takes place on steep slopes, the effects of logging can be seen from long distances, but this effect is mitigated as the vegetation recovers.

2.) Irreversible and Irretrievable Commitment of Resources

Since roads are not built into the area, there is no irreversible commitment of the site to harvest in the future. Since considerable time and effort, however, is likely to be spent producing another generation of trees, the site has a high probability of being logged in the future. Because most helicopter logging operations take place where roads would cause significantly undesirable effects, helicopters are the one means of harvest. If helicopters were not used, timber grown on these sites could be irretrievably lost.

3.) Adverse Effects Which Cannot Be Avoided

Because of the steep slopes, the logging operations is hard to screen and is usually visible for long distances. A high level of noise is generated in a helicopter logging operation. Slash control is difficult or expensive. Regeneration may be delayed because of lack of slash control and mineral soil exposure.

4.) Conflicts With Other Land Management Plans

None identified.

5.) Energy Requirements

Energy requirements are included in Table IV-18.

Z. SITE PREPARATION AND SLASH DISPOSAL

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes to this section between draft and final documents.

2. ENVIRONMENTAL CONSEQUENCES

Site preparation and slash disposal will follow timber harvest to ensure the desired quantity and quality of tree regeneration. Both activities are usually done at the same time. Appropriate site preparation and slash disposal methods depend on the capability and limitations of the landtype, the tree species, and the type of regeneration harvest used. Table IV-14 displays the average annual acres scheduled for reforestation and site preparation and the associated costs for the first five decades of each alternative. Site preparation and slash disposal activities are a direct result of the timber harvest program for each alternative. High timber harvest alternatives have high post-sale treatment activity levels.

The acres of site preparation that would be on slopes over 40 percent requiring broadcast burning or another nonmechanized method such as use of herbicides are also displayed in Table IV-14. If broadcast burning was used on these sites, under all alternatives the acres of broadcast burning to accomplish site preparation would significantly increase over past average annual accomplishments. In 1981, an average year, the Flathead National Forest burned 611 acres, over 90 percent of which were on slopes over 40 percent. The Preferred Alternative shows a seven fold increase in acres broadcast burned in the first decade over what was burned in 1981. To implement these alternatives, herbicides may be used more than they have been in the past, or average annual cost per acre will increase.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Slash disposal activities have potential for long-term impacts on productivity if improperly applied. Soil movement and fertility represent the most serious potential loss if mechanical treatments or prescribed fire treatments are excessive. Properly appplied treatments should result in short-term effects and have little impact on long-term productivity. Use of herbicides in site preparation presents some short-term hazards from storage, handling, and applying.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Soil and biomass lost in fuel treatment activities are irretrievable. Soil loss is insignificant, but biomass lost through physical disposal could become significant from an energy standpoint in the future.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Adverse effects result from the creation of activity and natural fuels. Additional adverse effects occur as visual degradation in the form of land scars and air pollution associated with the treatment of these fuels.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Some energy is required in slash management. If machinery is used, the energy required for a particular site can be significant.

AA. REFORESTATION

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes to this section between draft and final document.

2. ENVIRONMENTAL CONSEQUENCES

Planting would be used to reforest areas where natural regeneration cannot be assured or where additional tree species diversity in the regenerated stand is desired.*

Based on experience, planting would be necessary on low productivity sites. With low funding levels, spot planting would be used. The FORPLAN economic efficiency analysis, however, indicates that PNV of the Forest can be improved for all alternatives if full-scale planting was used to convert low value producing lodgepole pine stands to mixed conifer stands.

Planting would be scheduled under moderate and high management intensities to improve tree species composition and to minimize the time to regenerate the stand. Planting would also be used to rehabilitate stagnated stands. The analysis of the PNV benchmark, however, shows that treatments should be delayed until the fifth decade or later to improve the present net value.

The Forest's backlog of reforestation of nonstocked areas is included in the first decade estimates of planting needs for all alternatives. Average annual acres scheduled for planting for the first five decades are shown in Table IV-14.

Reforestation, both natural and planted, is directly related to the timber harvest schedule of each alternative.

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* Tree stocking standards are contained in "Habitat Type Group Standards and Guidelines for Vegetative Management" available in the planning records. Minimum stocking standards must be met within 5 years.

Under all alternatives, planting requirements would increase over experienced levels. Only under Current Direction were existing sawtimber stands harvested under moderate or high intensity prescriptions, explaining the high planting acres shown. The planting schedules for other alternatives vary according to the acres of low productivity stands harvested.

Transitory Range - The transitory nonwilderness range resource is provided almost entirely by the Forest's timber harvest program. Timber management objectives for reforestation often conflict with use of an area for cattle grazing during the period of time in which a new tree stand is becoming established (Hall, 1975).

After seedlings reach 1 foot high or more, conflict between cattle and timber management is reduced. Under all alternatives, livestock grazing is restricted in areas where trees are becoming established (FSM 2472.7).

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

It is likely that the product harvested from a thinned stand will be more valuable than those from unthinned stands. This is due to larger average diameter trees which are cheaper to log and produce higher value products. The total usable volume of wood produced may not vary significantly between thinned and unthinned stands.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The only irretrievable commitment associated with reforestation efforts would be in cases where trees are not planted or when planting fails. The fiber lost during this period of time could not be recovered.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Due to the unpredictable nature of factors that have a significant impact on reforestation, such as weather and cone crops, some initial reforestation efforts may fail.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Most of the energy used in the precommercial thinning operations will be the transportation of crews to and from the work areas. This is a small portion of the total Forest use.

BB. TIMBER STAND IMPROVEMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

There were no significant changes in this section between draft and final documents.

2. ENVIRONMENTAL CONSEQUENCES

Moderate or high management intensities provide for precommercial timber stand improvements. No cultural treatments would occur under low intensity management.

Regenerated stands managed under high intensity would be weeded at the end of the first decade of growth to achieve the desired stocking levels and composition of tree species (see Appendix B or the Flathead National Forest Coefficient Documentation, planning records).

Under moderate and high intensities, precommercial thinning occurs at the end of 20 years of growth to provide the highest opportunities for growth of crop trees and to maintain the desired composition of tree species (Ibid).

The scheduling of precommercial thinning is directly related to the schedule of timber harvest volume that optimizes the PNV of the Forest for each alternative and that will earn at least a 4 percent real rate of return. Precommercial thinning is the cultural treatment that starts a timber stand on a managed growth rate and yield. The average annual acres of timber stand improvement scheduled for the first five decades are displayed in Table IV-14. The Preferred Alternative exhibits a slight reduction (200 acres per year) compared to the Draft.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Thinning is unlikely to affect the productivity of wood fiber. The possibility exists that the final product following thinning may be more useful or valuable. Thinning provides the opportunity to maintain desired vegetation species mix and improve wildlife forage.

4. IRREVERSIBLE AND IRRETRIEBABLE COMMITMENT OF RESOURCES

Thinning to stocking levels below optimum will result in some volume losses over the rotation period. Funds invested in cultural treatments will not be available for other uses.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Some of the slash created by thinning will likely not be treated. This will present a fire hazard for a few years after thinning. Losses of cover will reduce or eliminate big game use of the areas. The visual resource may be adversely affected for a short period ot time.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Most of the energy used in precommercial thinning will be used in transportation of crews to the sites. This is a small portion of the total Forest use. Energy used in commercial thinning is a part of the energy used in regular timber harvest.

CC. ROAD SYSTEM

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

The total miles of road construction estimated has very little change between the draft and final documents. The Preferred Alternative had slightly less miles projected than the Draft. Text is extensively rewritten to improve the description of projected new roads, and how they will be used. (See the following section on road management.)

2. ENVIRONMENTAL CONSEQUENCES

Road construction has one of the most significant impacts on the Forest, affecting most of the resources and uses (see "Forest Transportation Study Report," FSH 7709.11, Chapter 10). Roads are constructed to provide access to the Forest so that resource management objectives can be met. Once a road is in place, it can be used for many other purposes. The road itself is a new entity imposed on a landscape that previously had no more than trails providing transportation.

The Forest currently has about 3,000 miles of system road on the inventory plus about 600 miles of nonsystem roads which will revert to forest vegetation. Arterial and collector roads are essentially complete on the Flathead National Forest. These roads are the main stems and branches of the road network that the public is used to using. The additional roads that are projected as needed to implement the various alternatives are local roads. These roads are the branchlets on the end of the road system tree. They are usually narrow low standard roads designed for logging trucks, not passenger vehicles. Average cost per mile of road built in the future under all alternatives will be less than average costs during the last 10 years because the high standard, high cost roads are essentially completed.

Road reconstruction in all alternatives for the first five decades represents the need to bring some primitive local roads as well as substandard segments of existing arterial and collector roads up to acceptable standards. Road reconstruction thereafter represents roads that need reconstruction due to use and wear as well as unforeseen problems that develop after initial construction.

Changes in the Forest environment associated with road construction are related to the resulting total miles of road and to the road management philosophy associated with each alternative. Miles of road to be constructed vary with the number of acres designated to roaded timber production in each alternative and the logging methods used. The timing and amount of road construction over the planning horizon varies with timber harvest scheduling. Table IV-19 shows how the total road system would change from Decades 1 to 5 as each alternative is implemented. Total roads needed for each alternative at full development is also shown. The amount of roads needed are a direct effect necessary to support the timber harvest objectives for each alternative. There are no independent road construction objectives for any alternative.

Roadless Resource - Roading not only alters the recreational setting and primitive or semiprimitive nonmotorized opportunities of roadless areas but may also cause the loss of some ecological and geological features of scientific, educational, historical, and scenic value. Portions of existing roadless areas would never be roaded because of landform features or lack of the resources for which management activities require roading. Where portions of a roadless area are roaded, however, the opportunity for wilderness management would be foregone. Alternative 9 as a maximum wilderness alternative projects the fewest miles of road required, Alternative 6 the most. The Preferred Alternative projects roads in less than 5 percent of existing roadless areas in Decade 1. No roadless area would be reduced to less than 5,000 acres and less than 25 percent of the total roadless would ever be developed.

Recreation - The impacts of new roads on recreational settings and opportunities vary, dependent upon the existing level of development for an area and the variety of recreation opportunities available.

Impacts on unroaded areas will be greater than on areas that have already been accessed. The natural environment in currently roadless areas will undergo a permanent change as roads are constructed. The recreational setting will change from roadless to roaded, with corresponding changes in the type of recreation opportunities and groups of users.

As areas are roaded, opportunities for solitude and primitive unconfined types of recreation will be degraded. Recreationists desiring these opportunities will have to shift their activities to areas of the Forest that will remain unroaded.

At the same time, people seeking motorized access and recreation will have new opportunities available to them. Road management can, to a certain extent, mitigate potential conflicts between recreationists by providing both nonmotorized and motorized opportunities.

Additional roads in developed settings increase road density but do not change the overall environment. Here, too, a road management program can achieve a desirable road density, restricting motorized access on some roads at certain times of the year to provide the fullest range of recreation opportunities. (See the following section on Road Management.)

Visual Quality - Road construction can affect the basic character of the landscape by removing vegetation and disturbing the soil, thus changing the color texture and lines of the landscape (Forest Service, National

TABLE IV-19 Miles of Road Required by the End of the First Five Decades - Flathead National Forest

Alternatives & Benchmarks	Miles of Road in Existence for Each Decade 1	2	3	4	5	Full Development
1	3613	4039	4544	5235	6054	6088
2	3802	4379	5097	5959	6316	6316
3	3802	4264	4792	5434	5832	6106
4	3402	3735	4493	5492	6077	6288
5	3726	4217	4791	5657	6090	6090
6	3772	4719	5416	6457	6748	6748
7CD	3818	4443	5291	6187	6398	6601
8	3849	4323	4850	5488	5956	6027
9	3426	3849	4243	4838	5404	5404
10	3696	4146	4696	5582	5898	5898
11	3895	4366	4906	5550	6021	6021
12	3889	4357	4894	5534	6002	6002
13	3885	4350	4884	5521	5986	5986
14	3872	4327	4850	5474	5929	5929
15	3855	4299	4809	5419	5863	5863
16	3808	4219	4693	5261	5672	5672
17 PA,Dep.	3895	4340	4880	5524	5917	5917
PNV	3669	4286	4864	5714	6525	6525

NOTE: In addition to the miles noted above, miles of road reconstruction per decade for the first five decades is 170.

Forest Landscape Management - 2(4), Roads, 1977). In open areas, roads introduce strong lines into the landscape that can be visible for many miles, depending on topography and vegetation. Cut and fill areas are often highly visible and may alter the landscape for long periods of time. Where recommended visual quality objectives require retention or partial retention of the natural-appearing landscape, the adverse effects of roads on visual quality can be mitigated by seeding slopes, leaving screen vegetation, treating slopes with a darkening agent, and keeping the occurrence of cuts and fills to the minimum where possible. Alternative 6, with the greatest miles of roads needed for management and the least concern for visual quality, would result in a Forest environment where roads adversely affected the visual quality of the Forest.

Cultural Resources - New road construction provides the impetus for cultural resources inventory because the associated ground disturbance has the potential for destroying historic and prehistoric sites. Under all alternatives, on-the-ground inventories will be conducted prior to construction.

Wildlife - The existence of roads alters the natural wildlife habitat. Roads often cut across game trails changing patterns of animal movement (Thomas and Toweill, 1982). Road widths present additional openings removing thermal and hiding cover and forage. Location and design of roads can mitigate some of these impacts. Roads can be constructed so that they follow the terrain with minimum cut and fill and clearing widths can be minimized. Seeding backslopes can help replace lost forage.

Riparian Areas and Fish - Road construction through riparian areas adversely affects stream channels, water quality, and fisheries (Woolridge, 1979; Bjornn, 1974; Ritchie, 1972; Thornson, 1976). Under all alternatives road construction in riparian areas would be avoided except where necessary to cross the areas. Any stream crossing would be designed to avoid blockage of fish movement (Management Prescriptions, Flathead National Forest planning records).

Sediment generated from new road construction and road maintenance is the most significant adverse impact on the Forest's fisheries. Sediment fills the spaces between gravels, smothering fish eggs, fry and fish food organisms and making the gravels unsuitable for spawning. Sediment can also fill in pools, making them unusable as fish resting places.

The anticipated off-site (downstream from National Forest System lands) impacts would be primarily associated with sediment. As discussed in The Flathead Drainage 208 Project information, sediment volumes from Forest management activities are low compared with those caused by natural flow fluctuations. Sediment produced on site in the primary bull trout spawning and rearing streams is the major Forest management concern. Analysis of sediment and other water quality parameters on the high risk bull trout streams will ensure that sediment levels will remain within acceptable levels.

Table IV-20 displays the relative effects of road construction and resulting sediment risk on fish population (see Table II-15 for sediment risk comparisons among alternatives).

TABLE IV-20 Fish Potential by Alternative* - Flathead National Forest

	Decade				
Alternative	1	2	3	4	5
1	577	667	677	677	653
2	448	434	381	314	218
3	544	604	588	557	508
4	563	582	543	468	393
5	567	662	660	649	614
6	430	416	362	293	169
7	432	398	324	270	200
8	542	478	463	441	188
9	530	602	654	638	600
10	567	663	713	705	676
11	544	600	586	555	519
12	542	605	592	571	518
13	541	605	593	576	523
14	541	604	597	581	531
15	545	608	600	588	541
16	579	678	771	840	846
17	548	609	605	600	565
Departure	534	535	592	592	560
PNV	532	595	578	537	453
Minlvl	534	605	676	747	817
Timber	396	318	241	139	24

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* Current situation for catchable trout in nonwilderness streams is 473,000 fish.

Alternatives vary in the degree of effects on fisheries. Under Alternatives 2, 4, 6, and Current Direction, high road needs and high levels of unrestricted motorized access result in declining populations of indicator fish species. To partially mitigate these impacts under all alternatives, road construction will use techniques that reduce the amount of soil entering the stream as sediment (see Soil and Water below). Alternative 17 will have an overall beneficial net effect on riparian areas and fish to mitigation of sediment risk and fish habitat investments.

Commodity Resources - Roads access the Forest, providing opportunities for management and extraction of commodity resources such as timber and oil and gas. Generally, local roads will be constructed by the timber purchasers, through road credits. The first road entry into some areas for timber management where timber values are too low to carry the cost will have to be financed by appropriated money (see Table II-9).

Under all alternatives, new roads may be constructed or existing roads reconstructed by oil and gas companies to develop the oil and gas resource. These would be in addition to the miles of road calculated in this Forest planning process. If a substantial find occurs, powerlines and/or pipelines may be constructed along the road corridors.

Soil and Water - Road construction has a significant adverse impact on soil and water (Megahan, 1972; 1975; Megahan and Kidd, 1972). Construction activities cause the disturbance and removal of soil, which can result in soil erosion, increased sediment in the streams, and degraded water quality. This effect varies by the amount of roads constructed, the season of construction, the types of soils, and the steepness of slope on which the roads are constructed. In addition, maintenance of roads can cause sedimentation of the streams as grading disturbs the road surface and results in soil loss through erosion.

Road maintenance needs are higher if roads receive high volumes of traffic and are used throughout the period of time they are not closed by snow. Seasonal restrictions on motorized access reduce maintenance needs. Year-round closures can reduce maintenance level needs even further if the road has been designed for little or no maintenance. If closed to public motorized traffic, roads need to be maintained only to protect the investment and prevent soil erosion.

All alternatives will incorporate proper road location, design and construction and installation of drainage structures to help mitigate the impacts of road construction on soil and water. Grass seed, mulch and fertilizer, sod and netting could be used on cut and fill slopes to stabilize the soil and prevent erosion. In addition, roads will be constructed when the ground is not muddy, to avoid moving soil when it is prone to erosion. Maintenance practices will be planned to minimize soil disturbing activities. Traffic restrictions are imposed during the wet seasons to protect road surfaces and minimize reconstruction and maintenance needs.

Protection - Increases in road access increase the potential for person-caused fires; however, roads also increase initial attack capabilities and provide fuel breaks. Traffic restrictions in areas of high fire potential can diminish the possibility of person-caused fires. Thus, Alternatives 1 and 5 would provide the least risk.

Because roading provides greater access to the Forest, more timber stands which are susceptible to insects and disease may be harvested.

Air Quality - Burning of right-of-way slash from road construction and dust from road use would have localized adverse effects on air quality. These effects generally would be short term and not significant. On some roads with high levels of traffic, dust could be mitigated by applying water or oil to the road surface. These mitigation measures would occur under all alternatives.

Social and Economic - Roads provide the public access to National Forest System lands, providing opportunities for driving pleasure, for firewood gathering, berrypicking, and for access to roadless areas. The majority of public use is on the Forest's arterial and collector roads, which are, for the most part, already in place.

Timber - The roads to be constructed under any alternative would generally be relatively short, low standard, and at the end points of the existing system. Future roads would be planned and designed to meet the total functional and environmental needs. The increase in amount of timber harvested on steeper slopes will require roads to access these areas.

Table IV-19 depicts the total road requirements for each alternative and the PNV and Minimum Level Benchmarks for Decades 1 through 5 and at the level of full development needed to meet the management objectives of each alternative. Full development in all alternatives is usually reached in the fifth or sixth decade. Total road requirements combine existing and needed (still to be constructed) roads.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Construction of roads has a long-term effect on vegetative productivity. Even though efforts may be made to rehabilitate a road, the roadbed itself and the cut and fill slopes will not produce timber. If the roads remain active, this acreage is removed from the vegetative production capacity of the area. On the other hand, roads allow timber harvest and resource management which can have a positive effect on the future productivity of the overall area.

Roads remove the habitat of some small animals and birds even though the edge of roads may create habitat for others. Roads change the type of recreation experience available in the area. Actively traveled roads can have a deleterious effect on the movement of big-game animals. Roads can have an impact on the visual resource which is long lasting. Roads also continue to produce sediment after the initial construction. This background level of sediment can reduce the long-term productivity of the fishery and delay recovery of the habitat.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The construction of roads to provide future access to the Forest is considered an irreversible action because of the long time needed for a road to revert to natural conditions. Also, the extraction of rock and gravel used for road construction and reconstruction is an irreversible action. Alternatives 2 and 6 and Current Direction would require the most miles of road construction and provide for the most short-term uses that foreclose future options.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Increases in sedimentation resulting from soil disturbance and increased water yield associated with road building activities.

Reduced roadless acres due to other management objectives.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

None identified.

7. ENERGY REQUIREMENTS

Projected energy requirements for road construction and reconstruction are displayed in Table IV-21 for Decades 1-5.

TABLE IV-21 Energy Consumption Related to Road Construction and Maintenance (Billion BTU's) - Flathead National Forest

	Decade				
Alternative	1	2	3	4	5
1	280.4	233.9	264.4	338.8	387.7
2	350.1	310.8	373.3	787.4	426.2
3	352.5	262.7	280.4	609.6	415.7
4	187.5	201.9	372.5	499.1	565.5
5	272.4	241.9	263.5	372.5	443.8
6	363.7	504.7	318.0	496.7	467.0
7 CD	362.1	326.0	425.4	917.2	540.7
8	659.3	475.8	518.3	607.2	471.0
9	363.7	504.7	318.0	496.7	467.0
10	272.4	241.9	263.5	372.5	443.8
11	659.3	475.8	518.3	607.2	471.0
12	659.3	475.8	518.3	607.2	471.0
13	659.3	475.8	518.3	607.2	471.0
14	659.3	475.8	518.3	607.2	471.0
15	659.3	475.8	518.3	607.2	471.0
16	280.4	233.9	264.4	338.8	387.7
17 PA	600.0	357.0	411.7	495.1	356.5

DD. ROAD MANAGEMENT

1. SUMMARY OF CHANGES BETWEEN DRAFT AND FINAL

This section did not appear in the Draft EIS documents. Alternative 17 reflects a more aggressive road management policy than displayed in the draft. The final EIS attempts to clarify the road management practices needed to achieve the multiple-use objectives of the alternatives.

2. ENVIRONMENTAL CONSEQUENCES

Road management activities consist of road closures and restrictions plus maintenance, location, and construction and design standards utilized to reduce the more negative effects of road construction on other resources. Primary effects of these activities are to reduce the displacement and exposure of base mineral soil and limit human disturbance in specific areas at selected times. Open road density expresses an index of security from motorized traffic.

The average Forest-wide road density that would exist at the full development stage is displayed below in Table IV-22. The density of miles shown is determined by dividing the total miles at full development by the total square miles of Forest land outside the wildernesses (1,961 square miles).

Table IV-22 also displays a desired open road density. This represents the road management direction each alternative and benchmark would enact to meet resource management objectives. Desired unrestricted densities are the maximum number of miles of road unrestricted for motorized use at full development divided by the total square miles of nonwilderness Forest land (1,961 square miles).

The density calculations are tools for alternative comparison only and should not be interpreted as on-the-ground densities. Full-development road densities could vary from 0 to 5 or 6 miles per square mile depending upon the logging system. Road restrictions also vary depending on site-specific management objectives and season of use.

TABLE IV-22 - Average Road Density Based on Full-Level Development and Desired Open Road Density - (miles/sq. mi.)1/ - Flathead National Forest

Alternatives & Benchmark	Total Road Density	Desired Open Road Density 2/
1	3.1	1.6
2	3.2	2.9
3	3.1	2.5
4	3.2	3.0
5	3.1	1.9
6	3.4	3.1
7	3.4	2.8
8	3.1	2.3
9	4.5	3.0
10	3.5	1.9
11	3.1	2.3
12	3.3	2.3
13	3.4	2.3
14	3.5	2.3
15	3.7	2.3
16	3.5	1.6
17 (PA), Departure	3.0	1.3
PNV	3.3	3.2
Existing Situation	1.7	1.3

1/ Road density in miles per square mile is based on 1,961 square miles outside wilderness designations. It reflects the total miles of road existing at the full level of development.

2/ Maximum density of roads open for public use without restrictions. The maximum level of open roads occurs during summer season.

Table IV-23 displays how the Forest road system would be managed at full development to achieve the desired open road density necessary to achieve the multiple-use objectives of each alternative.

Mineral Activities - The presence of roads constructed to access timber stands would facilitate exploration for oil and gas and other minerals. The costs associated with oil and gas development would be reduced if the existing transportation system could be used.

TABLE IV-23 Miles of Road by Road Use Management Objective at Full Development - Flathead National Forest

Alternatives Benchmark	Full Development Total Miles	Miles Open Year Long	Miles Seasonally Closed	Miles Closed Year-Long
1	6,088	2,100	1,388	2,600
2	6,316	3,700	2,266	350
3	6,106	2,700	2,806	600
4	6,288	3,500	2,538	250
5	6,090	2,700	1,890	1,500
6	6,748	4,000	2,398	350
7 CD	6,601	3,600	2,501	500
8	6,027	2,700	2,727	600
9	5,404	5,000	204	200
10	5,898	2,700	1,698	1,500
11	6,021	2,700	2,721	600
12	6,002	2,700	2,702	600
13	5,986	2,700	2,686	600
14	5,929	2,700	2,666	563
15	5,863	2,700	2,600	563
16	5,672	2,100	1,038	2,534
17 PA, Dep.	5,917	2,000	2,190	1,727
PNV	6,525	6,000	285	240
Existing Situation	3,277	2,063	753	461

Recreation - A road management program can achieve a desirable road density, restricting motorized access on some roads at certain times of the year to provide the fullest range of recreation opportunities.

At full development (generally Decade 5), Alternatives 9 and 16 would have the lowest total miles of road existing on the Forest (5,404 and 5,672 miles respectively). These alternatives would also have the fewest open roads. Alternatives 2, 4, 6, and Current Direction would have the greatest amount of unrestricted motorized access (about 5,600 to 6,000 miles) and the highest total miles of road (6,288 to 6,748 miles). Under these alternatives, roaded recreation opportunities would be high.

Wildlife - The opportunities roads present for increased human access to the Forest poses the greatest adverse impacts on wildlife (Lyon, 1979; Thomas and Toweill, 1982). Human activities and encounters with wildlife can disturb elk calving areas, summer and winter ranges, animal migration routes, nesting sites, dens, forage areas, and security areas. Potential effects include displacement of animals from their historically-used ranges, poaching, reduced security from hunters and other people, and conflicts between animals and people that may result in the killing or relocation of the animals. Particularly during hunting seasons, open roads can adversely affect migration of big-game animals to winter habitat. Alternatives 2, 4, and 6, with high levels of road construction and minimal restrictions on motorized public access, would most adversely affect wildlife populations in the ways noted above.

A road management program can minimize the potential adverse impacts of the increased motorized access afforded by road construction. Access restrictions applied seasonally or year-round can maintain security areas for species intolerant of human disturbance. Alternatives 1 and 5 would impose the most restrictive road management program, providing the highest benefits to wildlife species that require security.

Restrictions on motorized access not only provide security for wildlife but during hunting season also increase the variety of environmental settings available to the hunter.

Soil and Water - Alternatives 1, 5, 10, 16, and 17 with the least miles of open road would offer the lowest potential for erosion and degradation of water quality. Alternatives 2, 4, 6, and Current Direction with comparatively unrestricted high total miles of road would have high potential for adverse impacts.

Social and Economic - Roads provide the public access to National Forest System lands, providing opportunities for driving pleasure, for firewood gathering, berrypicking, and for access to roadless areas. The majority of public use is on the Forest's arterial and collector roads, which are, for the most part, already in place.

Road management programs under each alternative imply different levels of restrictions for motorized public access, depending upon the resource management objectives of the alternative. The motorized access restrictions under all alternatives would focus on the local roads, which are the category of roads least used by the public. Alternatives 1 and 5 would provide the most access restrictions. The level of open road miles in the fifth decade would approximate that existing on the Forest now. On the other hand, Alternative 6 would more than double the existing level of open roads by the end of the road construction phase in the fifth decade. Alternative 17 has the lowest open road density objective of all alternatives at full development, but motorized access would remain similar to the current situation.

3. SHORT-TERM USE VS. MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Some roaded recreation opportunities are lost but wildlife habitat is enhanced.

4. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Recreation opportunities may be lost when roads are closed. Some areas may be closed to firewood cutting.

5. ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Restriction of the public's use of closed roads for firewood gathering and other road access needs.

6. CONFLICTS WITH OTHER LAND MANAGEMENT PLANS

Forest road closures should not conflict with plans of the Montana Department of Fish, Wildlife, and Parks because of the coordination between these agencies that has occurred and will continue to occur.

7. ENERGY REQUIREMENTS

No significant requirements.

V. List of Preparers

NEPA requires a list of persons who were primarily responsible for preparing the EIS (Environmental Impact Statement), their area of expertise, experience, and professional discipline. Three EIS documents have been prepared; the Draft EIS released March 1983, the Draft EIS Supplement released November 1984, and the final EIS. The Flathead National Forest personnel, primarily responsible for preparation of these planning documents, are listed below.

Forest Supervisor

Edgar B. Brannon Jr.

M.S. Public Administration, M.S. Geography, B.S. Landscape Architecture; 15 years experience with the Forest Service as a Landscape Architect; Zone Landscape Architect, Assistant District Ranger, Planning Systems Specialist, Group Leader Land Management Planning, Deputy Forest Supervisor, and Forest Supervisor.

John L. Emerson (Retired)

B.S. - Forest Management; 31 years experience with Forest Service as District Ranger, Timber Staff Officer, Deputy Supervisor, and Forest Supervisor.

Planning Staff Officer

Warren Illi

B.S. - Forest Management; 20 years experience as Assistant Land Staff Officer, Land Purchase Exchange Evaluation Specialist, Project Leader, Flathead Wild and Scenic River Acquisition Project, Lands and Minerals Staff Officer, and Planning Staff Officer.

Dale N. Bosworth

B.S. - Forestry; 15 years experience in timber management as a Timber Planner, District Ranger, and Planning Staff Officer.

Planning Team

Paul W. Conrad - Planning Forester

B.S. - Agronomy/Chemistry, M.S. - Botany/Agronomy; 25 years experience as Range Management Researcher, Ecologist, Biotic Planning Specialist, and Planner/Forester.

Dave C. Cawrse - Forest Economist

B.S. - Forest Resource Management, M.S. - Forest Economics; 6 years experience in operations research, forest economics, and land management planning.

Fred Hodgeboom - Timber Planner

B.S. - Forestry, graduate study - Forest Ecology and Silviculture; 23 years experience with the Forest Service as Forester, Supervisory Forester, District Silviculturist, and Planning Forester.

Rita P. Thompson - Environmental Coordinator

B.S. - Biological Sciences, M.S. - Plant Science; 9 years experience with Forest Service research, Forest planning writer/editor, and Long Range Planning Staff and Environmental Coordinator.

Charles H. Burley - Operations Research Analyst

B.S. - Forest Biometrics, M.S. - Forest Management/Quantitative Methods; experience as staff assistant for Eisenhower Consortium, graduate teaching assistant at SUNY College of Environmental Science and Forestry, and Operations Research Analyst.

Susan Giannettino - Social Scientist/Public Affairs Specialist

B.A. and Masters - Anthropology and History, Ph.C. - Anthropology; experience as Forestry Technician, Social Science Technician, Anthropologist, Social Scientist/Writer-Editor, and Public Affairs Specialist.

Dave Pirker - Program Analyst

B.S. - Industrial Arts and Technology; 23 years experience in Budget and Finance, and as an Administrative Officer.

Carolyn N. Snyder - Program Assistant

Nine years experience with the Forest Service in various clerical and technical areas. Assisted in the development and modeling of the wilderness alternatives for the Supplemental DEIS.

M. Jann Bodie - Writer/Editor

B.S. - Landscape Architecture; 6 years experience with Forest Service as Civil Engineering Technician and Writer/Editor.

Royelynn Warren - Planning Aid/Receptionist

Associate Degree in Computer Programming; 9 years experience with Forest Service as Resource Clerk, Typist, and Planning Aid/Receptionist.

Janice A. Gietzen - Planning Aid, Forest Plan Typist

Six years experience with Forest Service as District Clerk, Computer Technician, Typist, Accounting Technician, and Planning Aid. Compiled data for tables in the EIS.

Interdisciplinary Team

(People, not previously mentioned, who functioned as members of Forest Plan ID Teams).

Paul Beckley - Forester (Silviculturist)

B.S. Forestry; M.F. Forestry; 13 years with the Forest Service in Timber Management.

Beth Burren - Recreational Forester

B.S. - Math, M.S. - Forestry; 3 years experience as Recreational Forester.

Michael D. Conner - Public Information Officer

B.S. - Forest Management; 18 years experience with the Forest Service which included timber management exchange, donation and status, and Public Information Officer.

Leo H. Dawson - Fisheries Biologist

B.S. - Wildlife Conservation, M.S. - Aquatic Entomology; 25 years experience in Fisheries Biology and Water Quality.

Ronald DesJardins - Supervisory Forester (Resources) (1980-1984)

B.S. - Forest Management; 16 years with the Forest Service in Timber Management and Resources.

Edmund L. Fivas - Forest Geologist

B.S. - Geology; 1 year as Geologist for the U.S.G.S., 3 years as Geologist for the B.L.M. and 5 years experience as Forest Service Geologist.

Robert Hensler - Resource Staff Officer

M.S. - Wildlife Management; 23 years experience with Forest Service as Wildlife Biologist and Resource Staff Officer, 3 years with Montana Fish, Wildlife, and Parks.

Ray Keibler - Supervisory Forester (Timber Mgmt.)

B.S. Forestry; 18 years experience with the Forest Service in Timber Management.

W. Max Lauder - Transportation Planner

B.S. - Civil Engineering; 15 years experience as Geotechnical and Bridge Engineer, Transportation Planner, and Engineering Representative on contracts.

Neil Malkasian - Supervisory Forester (Resources)

B.S. - Forest Management; 20 years with the Forest Service in Timber and Resources.

Albin H. Martinson - Soil Scientist

B.S. - Soils; 24 years experience as Soil Scientist for Soil Conservation Service and the Forest Service.

Gary McLean - Forest Archaeologist

B.A. - Anthropology; 6 years experience as Forest Service Archaeologist.

Steve Penner - Forester (Pre-Sale)

B.S. Forest Recreation; 12 years experience in Timber Management; (4 years with BLM, 8 years with the Forest Service).

John Robinson - Fire Management Officer (Retired)

Two years college; 37 years total experience in fire as lookout, smoke chaser, packer, headquarters guard, dispatcher, Forest Dispatcher, and Fire Management Officer.

Phyllis Snow - Forest Hydrologist

B.S. - Music, A.M. - Geology, Ph.D. - Watershed Management; 20 years experience i Hydrology and Geology Consulting and 8 years experience with Forest Service as Hydrologist/Geologist.

Gerald L. Stokes - Recreation, Wilderness, and Lands Staff Officer

B.S. - Forestry, M.S. and Ph.D. - Forest Recreation; 12 years experience in recreation planning, Wilderness and Lands management.

Cal Tassanari - Recreation Technician (retired)

B.S. - English; 23 years experience in trail maintenance and as Wilderness Ranger.

Pat Thomas - Landscape Architect

B.S. - Landscape Architecture; 9 years experience in Landscape Design and Landscap Architecture.

Ted Tveidt - Supervisory Forestry Technician

Twenty years experience in Timber, Recreation, and Fire.

Gary Vallieres - Computer Specialist

Two years college; 19 years experience as Engineering Technician and Computer Specialist.

Dennis Venturini - Visual Information Specialist

Experience as Package Design Engineer for Apollo Program - Aerospace Center Agrojist General; Land Management Designer for Land Planners, Nolte Associates; Visual Information Specialist.

Warren Williamson - Resource Forester

B.S. - Forestry; 25 years experience as Resource Specialist.

Technical Support

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Cynthia Smith, Cartographic Technician, Assistant, Land Surveying 8 years experience with Forest Service as Survey Technician (Cadastral), Survey Technician (Engineering), Cartographic Technician.

Pat Ulik - Supervisory Cartographic Technician - B.S., MS., Biology, 8 years experience with Forest service as Graphic Aide, Conveyance Examiner, Cartographic Technician.

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Betty Jo Townsend - Supervisory Clerk-Typist

Carol Walker - Support Services Supervisor and Conveyance Examiner

Barb Wurtz - Clerk-Typist

VI. Consultation with Others

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INTRODUCTION

This chapter discusses efforts to involve and consult with a variety of publics during formulation of the Forest Plan and final Enviromental Impact Statement. It also lists, and responds to comments received during the public comment periods for the 1983 Proposed Plan and DEIS (Draft Environmental Impact Statement), and 1984 Proposed Plan and DEIS Supplements.

The Forest Service has conducted an active public involvement program throughout the Forest planning process. Federal, State, and local government agencies have been informed and consulted. Individual Forest users and special-interest groups have also had an opportunity to actively participate.

The first section of this chapter, CONSULTATION WITH OTHERS DURING THE PLANNING PROCESS, summarizes public participation through the planning effort.* It also includes summary tables as to the number, type, and general tone of the comments received. A representative sample of these comments along with the Forest Service response is also included in this section.

The second section COMMENTS FROM OTHER AGENCIES, ELECTED OFFICIALS, AND INDIAN TRIBES AND THE FOREST SERVICE RESPONSES, reproduces the full text of the comments from these groups and the complete Forest Service responses.

The third section includes a listing of all commenters that submitted written comments during the two formal public comment periods that followed publication of the DEIS and DEIS Supplement documents.

The fourth section, LISTING OF AGENCIES, ORGANIZATIONS, GROUPS, AND INDIVIDUALS TO WHOM THE FINAL ENVIRONMENTAL IMPACT STATEMENT WAS SENT, lists all those to whom copies of this statement have been sent. Copies will be distributed to others upon request.

CONSULATION WITH OTHERS DURING THE PLANNING PROCESS

A. NOTICE OF INTENT

Notice of intent to publish an EIS was published in Federal Register 9963, February 14, 1980.

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* For a complete listing of all public involvement meetings held during development of the Proposed Forest Plan and DEIS, and the Proposed Forest Plan and DEIS Supplements, refer to Appendix A.

B. FOREST PLAN PROGRESS REPORTS

A series of progress reports was developed to keep interested agencies, groups, and citizens informed on the planning process, to announce formal meetings, and to request public comment. These reports were mailed to all parties on the mailing list. Mailing lists varied from 300 to 1,500 names and were adjusted from time to time, dropping names not requesting to stay on the mailing list. Progress Reports were prepared and sent out as follows:

Progress Report 1 - January 1980
Progress Report 2 - May 1980
Progress Report 3 - September 1980
Progress Report 4 - January 1981
Progress Report 5 - November 1981
Progress Report 6 - December 1982
Progress Report 7 - December 1983
Progress Report 8 - May 1984
Progress Report 9 - September 1984
Progress Report 10 - January 1985
Progress Report 11 - February 1985
Progress Report 12 - July 1985
Progress Report 13 - August 1985

C. SCOPING - ISSUE IDENTIFICATION, ALTERNATIVE DEVELOPMENT

To aid in identification and development of public issues and concerns, the Forest held a series of five public workshops as follows:

January 16, 1980 - Kalispell
January 22, 1980 - Columbia Falls
January 23, 1980 - Whitefish
January 24, 1980 - Kalispell
January 28, 1980 - Bigfork

Approximately 119 people attended these workshops and 16 written comments were received. Also, Progress Report 1 announced that written comments on public issues would be accepted up to February 4, 1980.

Progress Report 4, issued in January 1981, stated the on-going Forest policy regarding public input, "... your comments and questions are always welcome. We need your continued interest and involvement through out our Forest Plan development."

Progress Report 4, issued in January 1981, stated the on-going Forest policy regarding public input, "... your comments and questions are always welcome. We need your continued interest and involvement throughout our Forest Plan development."

An open house was held in Kalispell on Saturday, September 27, 1980, to provide an opportunity for the public to assist in the development of alternatives. About 95 people attended the 2 sessions, and about 22 written comments were received.

Other public involvement meetings held during the alternative development stage are as follows:

January 9, 1982: Special Forest planning meeting at Condon with Swan Valley residents.
November 3, 1982: Oil and gas overview on Flathead National Forest.

D. 1983 DEIS AND PROPOSED FOREST PLAN

Published in Federal Register: No. 9365 on March 4, 1983.
Formal Comment Period: March 4 to August 10, 1983 (includes 2 extensions)
Copies mailed: Approximately 870 copies of the DEIS and Proposed Forest Plan
Public meetings reviewing the DEIS and Proposed Forest Plan held:

April 12, 1983 - Condon
April 18, 1984 - Bigfork
April 20, 1983 - Columbia Falls
April 26, 1983 - Missoula
April 28, 1983 - Whitefish
May 3, 1983 - Yellow Bay
May 4, 1983 - Kalispell
May 9, 1983 - Polson
May 11, 1983 - Swan Lake
May 18, 1983 - Swan Valley (Field Trip)
May 20, 1983 - North Fork (Field Trip)

Number of Written Comments Received:

Federal Agencies - 3
State Agencies - 5
Local Agencies - 2
Indian Tribes - 1
Environmental Groups - 15
Recreation Organizations - 5
Timber/Energy Industries - 23
Individuals
Petitions - 2
Form Letters - 570 (6 Different Forms)
Personal Letters - 541

E. SCOPING - ROADLESS REVIEW

After publication of the DEIS and Proposed Forest Plan in March 1983, a Ninth Circuit Court decision resulted in the Flathead National Forest having to prepare supplemental NEPA documents addressing the roadless area management issue. The public was then given the opportunity to:

1. Review the Forest's 495,000-acre roadless inventory.
2. Recommend which roadless areas should become wilderness.
3. Recommend how roadless lands not recommended for wilderness be managed.

This formal public participation period ran from September 9 to October 14, 1983. About 320 letters were received on these roadless issues.

F. 1984 DEIS AND PROPOSED FOREST PLAN SUPPLEMENTS

Published in Federal Register: No. 45485, November 16, 1984.
Comment Period: November 9, 1984 to March 15, 1985 (includes 1 extension).
Copies mailed: Approximately 800 copies of the DEIS Supplement.
Public Meetings Held:

January 7, 1985 - Columbia Falls
January 10, 1985 - Missoula
January 16, 1985 - North Fork
January 21, 1985 - Creston
January 22, 1985 - Bigfork
January 28, 1985 - Whitefish
February 5, 1983 - Condon
February 6, 1985 - Kalispell

Number of Written Comments Received:*

Federal Agencies - 8
State Agencies - 4
Local Agencies - 5
Indian Tribes - 2
Environmental Groups - 20
Recreation Organizations - 10
Timber/Energy Industries - 34
Individuals
    Petitions - 3
    Form Letters - 997 (12 Different Forms)
    Personal Letters - 771

G. CONSULTATION WITH OTHER AGENCIES

Between 1980 and 1985, approximately 54 meetings were held between the Forest Service and:

Interagency Archeological Services
Bonneville Power Administration
USDI, Bureau of Indian Affairs
USDI, Fish and Wildlife Service
USDI, Glacier National Park
State of Montana: State Forestry Division
    Department of Fish, Wildlife, and Parks
    Governor's Office
    State Historic Preservation Office
    Environmental Protection Agency

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* Written comments received after March 30, 1985 were responded to, but were not added into summaries of comments received or placed on the listings of commenters.

Flathead County Advisory Technical Staff (Planning)
Flathead River Basin Study Steering Committee
Flathead Soil Conservation District, Board of Supervisor
Lake County Rural Development Committee
Confederated Salish and Kootenai Tribal Council
Blackfeet Tribe
British Columbia Forest Service (Canada)

H. CONSULTATION WITH OTHER GROUPS

Between 1980 and May 1985, approximately 80 meetings were held with 38 industrial, environmental, and Forest user groups. Meetings typically involved presenting a Forest Planning overview followed by a question and answer period. Group sizes ranged from 6 to over 500 people. Groups contacted included:

ARCO
Audubon Society
Champion International Corporation
Columbia Falls Kiwanis Club
Cutbank Snowgoers
Environmental Information Council
Flathead Back Country Horsemen
Flathead Lumber Company
Flathead Wildlife, Inc.
Flathead Valley Community College
Forestry Enterprises
Inland Forest Resource Council
Kalispell Rotary
League of Women Voters
Loggers and Related Businessmen
Louisiana Pacific Corporation
Methodist Men's Club
Montana Loggers Association
Montana Trappers Association
Montana Wilderness Association
National Forest Products Association
Northern Continental Conservation Committee
Off-Road Vehicle Users - Unorganized Groups
Phillips Petroleum
Plum Creek Timber Company, Inc.
Pyramid Mountain Lumber, Inc.
Society of American Foresters
St. Regis Paper Company
F.H. Stoltze Land and Lumber Company
Sunriser's Lions Club
Swan View Coalition
University of Montana, Faculty and Graduate Students
Washington State University, Forestry School
Western Environmental Trade Association
Western Wood Products Association
Whitefish Basin Forum
Whitefish Rotary
Women in Timber

I. IN-SERVICE MEETINGS

Throughout the 5-year planning period, dozens of planning meetings were held with District, Supervisor's Office, and Regional Office personnel. All meetings were geared to get interdisciplinary and broad-based employee input in the Plan. Eleven such meetings were held between October 1984, and February 1985, to get employee input on the DEIS and Proposed Forest Plan Supplements.

J. SUMMARY OF COMMENTS - BY ISSUE/RESOURCE CATEGORY

During the two formal public review periods for the 1983 DEIS/Proposed Plan and 1984 DEIS/Proposed Plan Supplements a total of 2,922 written communications (cards, letters, petitions, etc.) were received. These ranged from single page cards and letters to documents nearly 200 pages in length. They represented a total of 3,154 signatures. Separate issues and concerns recorded during the Forest Service review of these comments exceeds 11,000. All public comments were read and considered in developing the final Forest Plan and EIS.

Comments by Major Resource/Issue/Concerns Category

Issue/Resource	Numbers of Comments
Wilderness Additions	1,366
Timber Harvest Levels	1,196
Economics (usually associated with timber harvest levels)	1,014
Threatened and Endangered Species (mostly grizzly bear management)	722
Road Management and Construction	691
Old Growth	634
Water Quality and Fisheries	537
Riparian Management	509
Noisy Face and Visual Management	500
Recreation - Developed and Dispersed	311
Funding and Monitoring	283
Wildlife - Big Game and General	209
Timber Management	121
Minerals	109

K. HOW PUBLIC COMMENTS WERE USED

Within the broad framework of Forest planning, public input is one of five considerations in the decision-making process. Forest Service decisions are based on five factors: (1) the law, (2) technical information, (3) resource capability, (4) professional judgement, and (5) public input. Public input enters into the decision-making process when there is room for interpretation in any of the first four factors, especially with regard to which uses will be emphasized. Public input, for example, would not be a factor in citing a violator of Federal regulations, but it does influence decisions about whether Forest management could emphasize one use versus another.

In accord with 40 CFR 1503.4, the comments about the Proposed Forest Plan and Draft EIS were treated in the following ways:

1. Comments offering technical corrections or pointing out inconsistencies have been used to revise the final documents.

2. Comments requesting clarification or comments resulting from misunderstanding of what was meant in the documents indicate areas where the Proposed Forest Plan or EIS needed clarification. Corrections were made, or the reason a correction was not made is explained in the Forest's response to the comment.

3. Another type of comment questioned some part of the analysis. In some cases the analysis was clarified, supplemented, or modified. Where further analysis was not done, the reason was explained in the response to the comment.

4. A majority of comments suggested changes in the Proposed Forest Plan direction, outputs, and land use assignments. These comments expressing a differing preference for Forest Service management required careful consideration both from an individual standpoint as well as a collective one. Where feasible and appropriate, management area direction in specific areas was changed in response to comments; however, some comments requesting changes in the Proposed Forest Plan did not result in any change.

The Forest Service use of public comments is documented throughout the final EIS and Plan. A summary of this documentation is as follows:

1. This chapter reproduces the comments from other agencies, elected officials, and Indian Tribes and the Forest Service response to each. The vast amount of written input from organization, groups, and individuals makes it administratively and economically impractical to reproduce the full text of all written input in this Chapter. All written input was carefully read, considered and a Forest Service response developed for each comment. These comments and Forest Service's responses are filed in Appendix MM. This Appendix MM is an unbound appendix to the final EIS and is located in the Forest Supervisor's office. Any individual or group may request to view that file and/or have Forest Service Planners review their written comment(s) and the Forest Service response. All such requests will be accommodated. Contact the Planning Office, Flathead National Forest, P.O. Box 147, Kalispell, Montana, 59901 to set up an appointment.

Individuals or groups not residing in or near Kalispell may request a copy of the Forest Service's response be sent to them.

Since Appendix MM involves several thousand pages, copies are not readily available for public distribution.

2. A summary of substantial changes between the Draft(s) and final Environmental Impact Statements is provided in Chapter I. Throughout Chapters II, III, and IV, changes are summarized and noted where they occur.

L. SUMMARY OF PUBLIC COMMENTS

The content analysis which follows is a brief summary of public and other agency comments on the major Forest issues. These summary comments are derived from public review of the 1983 DEIS and Proposed Forest Plan and the 1984 DEIS and Proposed Forest Plan Supplements. The purpose of the summary is to give the reader a "sense" of what the public said. For details, the reader should review the individual comments.

A 159 day public review period in 1983, for the original DEIS and Proposed Forest Plan, resulted in 1,086 letters or post cards. Some folks submitted more than one response. A total of 1,035 individuals were heard from.

The five most frequently discussed issues were: (1) timber harvesting levels, (2) economic impacts of management proposals, (3) grizzly bear habitat management, (4) roadless area designation and management, and (5) road management. Key new issues were wilderness designation and funding of resource management and monitoring activities.

The second public review period for the DEIS and Proposed Forest Plan Supplements extended from November 9, 1984, to March 15, 1985. Since the supplemental DEIS/Plan differed from the original 1983 DEIS/Plan with respect to roadless evaluation (wilderness additions) and grizzly bear management, public comments generally centered around these two key issues. Timber harvest levels, economics and funding, and road management, however, continued to generate many comments as they did in the original 1983 DEIS/Plan. New issues that generated many comments included timber management in the Noisy Face geographic area, gray wolf recovery, and water quality.

It was apparent from reading the comments, that many commenters did not personally read the draft NEPA documents themselves, but were commenting based on limited data supplied by their friends, employers, or special interest organizations. Many individual letters reflected almost identical thoughts and viewpoints. Many viewpoints were supported by selected factual data taken from the DEIS/Plan, but taken out of context.

The vast majority of letters strongly supported either end of the wide range of Forest management options available. Letters either were strongly prodevelopment (i.e., increase timber harvest levels, allow oil and gas development, jobs are more important than grizzly bears), or strongly antidevelopment (i.e., need more wilderness, reduce timber harvest levels, restrict new road construction, etc.). Few letters supported a wide spectrum of multiple use. Few letters supported either of the two preferred alternatives. Most letters supported the alternatives which best supported their own special interest.

Discussion of major issues are summarized by resource:

1. TIMBER HARVESTING ISSUE

Timber harvesting was an issue in both the 1983 DEIS/Plan and 1984 DEIS/Plan Supplements. Virtually every other Forest issue orginated from the effects or perceived effects of timber harvesting. There was strong public concern with both sides of the issue, including those that felt we were harvesting too much timber and those that felt we were harvesting too little timber.

Many people felt that continued harvesting at current levels would:

a. Adversely affect water quality due to increased sediment from logging and associated road construction.

b. Adversely affect big-game populations by reducing security areas (i.e., reduced size of large blocks of mature forests and increased road access for hunters).

c. Adversely affect grizzly bear and gray wolf recovery due to the loss of security by increased roading associated with logging.

d. Adversely affect the roadless resource through roading and development. These folks support more wilderness to preserve roadless values.

e. Adversely affect old-growth dependent species by conversion of the Forest to younger, more vigorous timber stands.

Another recent issue that surfaced was the concept that the Forest Service is subsidizing timber production. Below-cost sales and deficit sales were frequently mentioned as indications of timber subsidy.

Generally, the opponents of timber harvesting centered their criticism on the adverse environmental/economic effects of timber harvesting, not the volume of timber sold or cut.

Proponents of increasing timber harvest centered their comments on the need to increase the volume of timber supplied to local mills. Most of these folks supported maintaining water quality, high levels of big game, recovering the grizzly bear, and monitoring old-growth dependent species, but felt the Forest Plan was over-protective of these resources by unnecessarily restricting timber harvest. In other words, they felt that timber harvest levels could increase while maintaining these other resources.

The Forest's sell target of 100 MMBF per year was strongly criticized as being too low. It was stressed that local industry, especially 5 to 15 years from now, will need 129 to 135 MMBF annually; therefore, keeping the sell at the 100 MMBF level would result in the loss of several hundred timber-related jobs. It was stressed that all suitable timberland should be removed from nontimber management areas, such as roadless recreation areas and amenity value areas. They also suggested that productive timber sites in all riparian areas should be scheduled for timber harvest. Many letters stressed that if trade-offs had to be made, jobs and the local economy were more important than grizzly bears and roadless recreation.

A subset of timber harvesting was the Noisy Face issue. The Noisy Face area, which forms part of the scenic eastern backdrop for the Flathead Valley, was the focal point of a timber harvesting versus scenic values controversy since 1983. This resulted in many Forest Plan comments on the pro's and con's of harvesting timber in this area. The reasons given for allowing or not allowing harvesting were generally similar to those already stated in this timber harvesting issue.

Visual quality was another element of the Noisy Face issue. Many letters strongly supported land management which would preclude additional road building or clearcutting. Many people felt that recreation use and wildlife management would be good multiple-use emphasis while maintaining present scenic values. Selective harvesting from existing roads was acceptable to many people because it would not adversely affect scenic values.

2. WATER QUALITY ISSUE

Maintaining the Forest's current high quality surface water was a key aspect of management which generated many comments. There was no opposition to maintenance of water quality, but a difference of opinion on how much other resource use, especially timber harvesting, had to be restricted to ensure maintaining water quality. Sedimentation from logging and road building associated with logging was viewed as the primary Forest activity affecting water quality. A few people commented on the effects of increased water yields due to timber harvesting.

Sedimentation was viewed as being bad because:

a. It would reduce the quality of bull trout spawning habitat and also egg survival.

b. Increased stream sedimentation would adversely affect people using Forest creeks and springs for their domestic water supply. This was a concern of many commenters living in the Noisy Face area.

c. It would contribute to the continued eutrophication of Flathead Lake.

Several commenters questioned whether predicted increases in sedimentation would violate State water quality standards.

3. GRIZZLY BEAR ISSUE

Proposed management of the threatened grizzly was a key issue. Like many other issues, many folks thought the Forest Plan was not doing enough for the bear, and a similar number thought that grizzly management was unnecessarily restricting other uses and resource production.

Those people supporting grizzly bear management generally found the Forest Plan Supplement, which included the grizzly bear guidelines for all occupied habitat, much more satisfactory than the original Forest Plan, which only included bear management direction for the three special bear management areas.

Those supporting intensive grizzly bear management frequently wanted more Situation 1 area in the Swan Valley, Swan Mountains, and lower South Fork; more road closures and less logging in Situation 1 areas; and the termination of oil and gas activities in Situation 1 areas. There was considerable criticism of the Forest's proposal to "improve" grizzly bear habitat by logging. People said that logging to improve grizzly bear management was too experimental to try in the Trail Creek area, our best habitat on the Forest. Some folks said that "habitat improvement" was simply a ruse to log an area designated for wildlife (bear) management. Many people said the only appropriate grizzly bear management was to leave it alone. Many proponents of wilderness viewed wilderness management as the best management for bears.

People who opposed grizzly bear management generally felt uneasy or personally "threatened" by grizzly management objectives. Reduced timber sell volumes and restrictions on motorized access were viewed as being caused by overzealous bear management. Timber industry input mentioned the higher cost of doing business due to grizzly bear constraints such as seasonal restrictions. Many people said that people and jobs were more important than bears.

4. WILDERNESS ISSUE

Additional wilderness was not an alternative in the 1983 DEIS/Plan, so comments regarding more wilderness were minimal. Proponents of wilderness generally commented on the need to preserve roadless areas in the 1983 DEIS/Plan. Only a few people commented on wilderness management.

The possible addition of more wilderness was the key reason for the DEIS/Plan Supplements and generated the greatest number of comments.

The wilderness issue was strongly polarized. Those that opposed additional wilderness usually opposed adding any additional area, while those that supported more wilderness usually recommended adding large areas.

Those opposing wilderness additions perceived more wilderness as limiting current and future increases in timber sell volume. The oil and gas industry opposed more wilderness because wildernesses are withdrawn from mineral entry. Many people voiced support for multiple use and they view wilderness as a single use. The motorized recreating public, those using snowmobiles, trail bikes, campers, RV's, etc., generally opposed wilderness addition. They stated that existing wilderness and proposed roadless and nonmotorized recreation areas already exclude them from a large portion of the Forest. Wilderness is also opposed by many people because it is not readily accessible for older Americans, handicapped citizens, and lower income citizens (i.e., only the wealthy can afford outfitter services, maintain horses or have lots of vacation time). There were also many comments that wilderness cannot be effectively used on short holidays or weekends.

Many people supported adding to the wilderness system. Supporters generally recommended Alternative "W" as proposed by the Montana Wilderness Association. This included support (in order of preference) for:

Swan Front
Swan Crest
Tuchuck
Mount Hefty
Thompson Seton
Young-Nasukoin
Mission Addition (northernmost)

Supporters for these wilderness additions justified these areas because they include only minimal amounts of suitable timberland, provide the best management to insure high water quality, provide good wildlife security areas, maintain the roadless resource, provide best security for grizzly bears, and maintain old-growth habitat. They also agreed that these areas are generally uneconomical to develop and contain insignificant quantities of oil and gas, if any. They view wilderness as being more permanent and long term than a Forest Plan roadless designation.

5. ROAD ISSUE

The Forest Plan proposal to construct roughly 3,000 miles of additional roads over the next 50 years drew criticism from many respondents. Numerous people argued "no more roads" and expressed concern about impacts on wildlife habitat, water quality, and recreational opportunities.

Even more people recommended institution of a more forceful road closure program. Some of the people who made this recommendation were clearly recommending more than that proposed in the Forest Plan. Others simply said things such as, "I would like to see more roads closed in big game areas to increase the big-game population," so perhaps they meant more than current, rather than more than proposed. In any case, there were far more proponents of road closures than there were opponents.

Generally, the supporters cited wildlife habitat security reasons for closing roads. In fact, many of the people who supported increasing timber harvest levels recommended road closures as a mitigation measure for the new access roads needed to harvest timber. By closing roads, they argued, you could manage timber as well as protect the wildlife.

Generally, opponents of road closures fell into two groups: (1) One group supported closing new roads but opposed closing roads that have been used by the public for several years; (2) The other group opposed closing roads because it restricts even further, their opportunities for motorized recreation and access to National Forest System land. There were relatively few comments of this sort.

Finally, several people said that if you are going to close roads you should CLOSE the roads. These people argue that gates and signs are ineffective.

6. FUNDING

Many people expressed concerns about funding. Some people agreed with the management plan, but said, "...will you get the funds to do what you said you would like to do?" In particular, funding for historically poorly funded resources such as wildlife, fisheries, recreation, and wilderness was questioned. The timber industry comments questioned whether there would be sufficient funds to do the timber cultural tasks that need to be done in order to reach the timber outputs predicted for future decades.

7. ECONOMICS

Many people questioned economics, especially timber sale economics. During 1984 and 1985, "deficit timber sales" and "below-cost timber sales" received considerable news media coverage. As a result of this media exposure, many people challenged timber sale policies that did not at least return all current out-of-pocket costs by the taxpayer. There were inferences that timber management should at least pay its own way or preferably make a profit. Many people related "below-cost timber sales" to proposed timber sales located in environmentally sensitive areas. Therefore, both environmental and economic reasons provide the basis for assigning a nonroading prescription to those potential sale areas.

COMMENTS FROM OTHER AGENCIES, ELECTED OFFICIALS, EDUCATORS, AND INDIAN TRIBES WITH FOREST SERVICE RESPONSE

A. INDIAN TRIBES AND FEDERAL AGENCIES

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U.S. Department of the Interior - Fish and Wildlife Service	VI-29

EXECUTIVE COMMITTEE

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ROLAND F KENNERLY
JOE J MCKAY
ARTHUR WELLS
LEONARD J MOUNTAIN CHIEF
CARL KIPP JR
TOM TAIL FEATHERS

RECEIVED
[illegible]
FLATHEAD N.F.

March 21, 1985

Mr. Ed Brannon, Jr.
Forest Supervisor
Flathead National Forest
P. O. Box 147
Kalispell, Montana 59901

Dear Mr. Brannon:

The Blackfeet Tribe suggests the following additions to the Management Guidelines in Section II of the Flathead National Forest Plan, as per your request for the Blackfeet Tribe's comments on this proposed plan:

A. Religious Rights of American Indians

This guideline should include:

A policy statement on the preservation and protection of Native American religious rights, a statement that activities will be assessed for their impact on Native American Religious sites, and a process for special use permits for temporary area closures for Indian religious purposes. In addition, the statement should include consultations with affected Tribes leading to agreements with the Forest Service on these issues. A

B. Employment

A statement should be included regarding the expansion of programs which promote employment for Native Americans. B

C. Consultation with Tribes

A statement should be included committing the Forest Service to consult with affected Tribes regarding any activity which may affect their religious rights and cultural resources. Affected Tribes should have the right to A

RESPONSE

A. A policy statement concerning Native American religious rights, protection of those sites, and consultation with affected tribes, is included as a Forest-wide management standard in Chapter II of the Forest Plan under Cultural Resources.

B Employment programs are not an integral part of this land and resource management plan. A copy of this letter was given to our personnel office. They will contact you regarding development of a cooperative agreement under P.L. 94-148, to promote employment opportunities for Native Americans.

participate in any inter-agency management teams whose actions affect Indian rights. Tribes should participate in decision making from the beginning regarding proposed activities in order to minimize conflicts. Consultations should be designed to lead to agreements with Tribes on Forest wide issues. All Forest Service documents relating to these issues should be shared with the Tribes. The consultation process should include a provision for adequate notice to be given to the Tribes of any proposed action.

If additional information is needed concerning the above additions please contact the Office of General Counsel, Blackfeet Legal Department, Browning, Montana.

We look forward to cooperating with you on these matters.

Sincerely,

Myrna J. Galbreath

MYRNA J. GALBREATH, Secretary
Blackfeet Tribal Business Council

MJG/tag

John Yellow Kidney

JOHN YELLOW KIDNEY, Vice-Chairman
Blackfeet Tribal Business Council

cc: Confederated Salish and Kootenai Tribes
P.O. Box 98
Pablo, MT 59855

S-1269

THE CONFEDERATED SALISH AND KOOTENAI TRIBES
OF THE FLATHEAD RESERVATION

Box 278
Pablo, Montana 59855
(406) 675-2700

Joseph E. Dupuis - Executive Secretary
Vern L. Clairmont - Executive Treasurer
George Hewankorn - Sergeant-at-Arms

FLATHEAD
NATION

TRIBAL COUNCIL MEMBERS
Joseph "Joe Dog" Felsman - Chairman
James H. Steele - Vice-Chairman
Al Hewankorn
S. Kevin Howlett
Robert L. McCrea
Sonny Morigeau
Michael Pablo
Victor L. Stinger
Ron Therriault
Teresa M. Wall

March 19, 1985

RECEIVED
MAR 21 1985
FLATHEAD N.F.

Flathead National Forest
Mr. Gary McClain
Planning Sector
Box 147
Kalispell MT 59901

Dear Mr. McClain:

This letter presents the comments of the Kootenai Culture Committee of the Confederated Salish and Kootenai Tribes concerning the proposed Forest Plan for the Flathead National Forest. I apologize for the late arrival of these comments but we have explained the reason for the delay to Warren Eli, Planning Director, in a telephone conversation on March 15, 1985 and he assures us that our comments will be considered.

We will limit the scope of our comments solely to the issue of cultural resources as discussed in the proposed Forest Plan at Page II-10.

1. Indian Religious Practices

As indicated by the name of the Forest, lands encompassed within the Flathead National Forest have traditionally been utilized by the Tribes comprising the Confederated Salish and Kootenai Tribes of the Flathead Reservation for various purposes, including but not limited to dwelling sites, temporary camps, and spiritual and religious practices. Certain sites within the Flathead National Forest are still being used by Tribal members for religious practices and other purposes.

Congress passed the American Indian Religious Freedom Act, 42 USC 1996, to guarantee to Indian religious practices protections afforded to other religions in the United States. Since forest use activities have the potential to effect Indian religious activity it is strongly suggested that during the course of planning activities the Tribes be consulted to determine the existance or non-existance of such sites.

RESPONSE

A policy statement concerning Native American religious rights, protection of those sites, and consultation with affected tribes is included as a Forest-wide management standard in Chapter II of the Forest Plan under Cultural Resources.

2. Cultural and Historical Sites

As discussed above, the Flathead National Forest includes portions of lands subject to historical and current use by members of the Confederated Salish and Kootenai Tribes. It is likely that there may be cultural and/or historical sites that could be afforded protection on Flathead Forest lands under the National Historic Preservation Act and the Archaeological Resources Protection Act.

The Tribes possess the knowledge and expertise to readily identify sites of significance in the development of a full historical and cultural preservation program for the Flathead National Forest.

3. Tribal Cultural Committee

The Confederated Salish and Kootenai Tribes established two cultural agencies of the Tribal government approximately ten years ago. Both the Flathead Cultural Committee and the Kootenai Cultural Committee have worked with various Federal agencies for the purpose of identifying religious, cultural and historical sites both on and off the Flathead Reservation. The Committees have established their expertise and furthermore, provide an insight not generally available to Federal or State preservation programs.

It is because of the two Culture Committees expertise and intimate knowledge of religious and historical sites existance within the Flathead National Forest, that we respectfully request that the proposed Forest Plan as it deals with cultural resources be revised to provide for consultation with the Tribes' Culture Committees.

Contact persons for the Culture Committees are:

1. Kootenai Culture Committee
Patricia Hewankorn
Box 1452
Elmo MT 59915

Phone: (406) 849-5541

2. Flathead Culture Committee
Clarence Woodcock
Box 454
St Ignatius MT 59865

Phone: (406) 745-4572

Thank you for your consideration of these comments and suggestions.

Sincerely,

CONFEDERATED SALISH & KOOTENAI TRIBES

Patricia Hewankorn
Kootenai Culture Committee

S-007

United States
Department of
Agriculture

Office of
the Secretary

Office of
Minority Affairs

Washington, D.C.
20250

JUN 6 1983

RECEIVED
JUN 15 1983
FLATHEAD N.F.

REFER TO: 8140

SUBJECT: Draft Environmental Statement
for the Flathead National Forest
Kalispell, Montana

TO: R. Max Peterson
Chief
Forest Service

We have reviewed the Draft Statement and Forest Plan with special interest in your assessment of the effects of proposed actions upon minority and other groups. Despite your thorough treatment of the possible effects of actions on a variety of elements, we offer the following suggestions for inclusion in the Final Statement.

1. In addition to the population changes and growth statistics cited on page III-51-63, under "Social and Economic-Existing Situation," we recommend that you enumerate the racial composition of the minority populations in or near the proposed project area in order to clarify the real impact of any economic benefit. A

2. You indicate in the section under "American Indian Religious Freedom Act," that you have included Indian representatives in your consultation; but you failed to include appropriate statements estimating the effects of the proposed alternative upon Indians residing outside the planning unit. B

3. Although you stated that Flathead Forest will continue to be committed to Affirmative Action, you should indicate (if possible) the extent to which minorities will benefit from employment during construction of the project. C

Thank you for the opportunity to comment on your draft statement.

F. Cleo Spartin
F. CLEO SPARTIN
Acting Director

RESPONSE

A. The Social and Economic Assessment for the Flathead National Forest did not include racial composition of minority populations.

B. We have no way of estimating the effects of the proposed alternatives upon Indians residing outside the planning unit.

C. We have no way of estimating the extent to which minorities will benefit from implementing the Forest Plan.

U-1001

DEPARTMENT OF THE AIR FORCE
AIR FORCE REGIONAL CIVIL ENGINEER CENTRAL REGION (AFESC)
1114 COMMERCE STREET
DALLAS, TEXAS 75242

0 4 DEC 1984

[illegible]
DEC 1[illegible] 1984
[illegible]

Mr. Edgar B. Brannon, Jr., Forest Supervisor
Flathead National Forest
1935 Third Avenue East
P.O. Box 147
Kalispell, Montana 59901

Dear Mr. Brannon:

Thank you for allowing us the opportunity to review the Draft Environmental Impact Statement and Proposed Forest Plan for the Flathead National Forest, Montana.

We continue to express our support of the Forest Service in developing functional management plans for lands under its control. The Air Force concern for these management issues contains the need to retain use of existing and the establishment of future military flight training areas and routes which may traverse these areas.

Currently no Air Force air operations cross any portion of the study area. Although flight training areas, routes, and airspace requirements of the military are subject to change and do change frequently, it is not anticipated that new routes will be established in the immediate future.

We are hopeful this information is useful in your planning. If additional information is needed, our staff point of contact is Mr. Raymond Bruntmyer, (214) 767-2514, or FTS 729-2514.

Sincerely,

Don-Michael Bradford

DON-MICHAEL BRADFORD, Captain, USAF
Director, Environmental Planning Division

Cy to: HQ USAF/LEEV

RESPONSE

Even though our documents do not specifically mention military flights over the Forest, we will do our best to cooperate with the military forces in coordination with our resource management goals and objectives.

Since the date of this review, the Flathead National Forest and the Air Force have coordinated low level test flights across the Forest in compliance with Federal requirements regarding minimum altitude of aircraft over wildernesses and Wild and Scenic River corridors.

Department of Energy
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

B-1293

RECEIVED
MAR 1 8 1985
FLATHEAD N.F.

In reply refer to: SJ

March 13, 1985

Mr. Edgar B. Brannon, Jr.
Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell Montana 59901

Dear Mr. Brannon:

Our Office of Engineering and Construction has reviewed the draft supplemental environmental impact statement (EIS) on the Flathead National Forest. Their comments follow:

> We have three primary energy development concerns that we evaluate in our review of any resource management plan. We are concerned that the plan give adequate consideration to (1) the management and protection of existing utility rights-of-way or corridors; (2) implementation of the National Forest Direction on Transportation and Utility Corridor Planning (FSM 1922.51) in regard to future utility and transportation corridors; and (3) the potential of National Forest lands for energy resource development, particularly renewable resources.
>
> We are pleased that the Flathead National Forest has addressed energy corridors in both the Great Bear Wilderness EIS and the 1983 Flathead Resource Management Plan EIS. The Forest has gone a long way in meeting the direction established by the Federal Land Management Policy Act. However, there seems to be no coverage of energy resources. We would like to see both corridors and energy resources discussed in the impact assessment and decisionmaking process. For example, we feel that each of the plans presented should discuss the potential effect the proposal might have on corridors, as well as potential renewable energy resources such as small hydro. We are particularly concerned about the Middle Fork Flathead Corridor (Window) and the corridor from Hungry Horse to Columbia

A

RESPONSE

A. Transmission corridors and hydro energy resources were not raised as an issue or concern during the scoping phase of the planning process, therefore, these topics were not discussed in detail. There is discussion about corridors in the EIS (Chapter IV) which indicates that effects would be similar under all alternatives. Appendix J in the Forest Plan lists areas which are excluded, should be avoided, or need not be avoided by utility corridors.

Hydro sites have been discussed in the EIS (Chapter III). The applications for these types of installations have been withdrawn during the past year.

Falls and Conkelley. We would also like to see the existing utility and transportation corridors crossing the Flathead National Forest be officially designated as corridors and so illustrated on all of your maps. B

We appreciate the opportunity to review the draft EIS. If you have any questions on these comments, please contact me.

Sincerely,

Anthony R. Morrell

Anthony R. Morrell
Environmental Manager

cc:
Earl Reinsel - Region 1, USFS

RESPONSE TO BONNEVILLE POWER ADMINISTRATION (Continued)

B. The Flathead National Forest has maps for the designated corridors on file in the Supervisor's Office in Kalispell. Maps in the planning documents did not include utility corridors because they were not a major issue on the Forest. The corridors are administered under a Memorandum of Understanding that will be continued unless terminated by the Chief of the Forest Service.

Bonneville Power Administration
U.S. Department of Energy

B-1293

BPA

UNITED STATES GOVERNMENT
Memorandum

RECEIVED
FLATHEAD N.F.

DATE: February 7, 1985

In reply refer to: EVH

TO: Tony R. Morrell
Environmental Manager - SJ

FROM: Timothy J. Murray, Chief
Environmental Analysis Branch - EVH

Timothy J. Murray

SUBJECT: Comments on DEIS Supplement - Flathead National Forest Land and Resource Management Plan

An E&C review was completed of subject EIS Supplement. We request that the following comments be submitted to the Flathead National Forest.

We have three primary concerns that we evaluate in our review of any resource management plan. First, we are concerned that the plan give adequate consideration to the management and protection of existing utility rights-of-way or corridors. Second, we are concerned that the plan consider future utility and transportation corridors. In this regard we look to see how the National Forest Direction on Transportation and Utility Corridor Planning has been implemented (FSM 1922.51). Third, we are concerned that all plans address the potential of NF lands for energy resource development, particularly renewable resources. In summary, we feel that energy development is an important issue that should be addressed in all resource management plan EIS's.

A We are pleased that the Flathead National Forest has addressed corridors in both the the Great Bear Wilderness EIS, and the 1983 Flathead Resource Management Plan EIS. We feel that they have gone a long way in meeting the direction established by FLMPA. However, the coverage of energy resources is conspicuous by its absence. We would like to see both corridors and energy resources discussed in the impact assessment and decisionmaking process. For example, we feel that each of the plans presented should discuss the potential effect it might have on corridors, as well as potential renewable energy resources such as small hydro. We are particularly concerned about the Middle Fork Flathead Corridor (Window) and the corridor from Hungry Horse to Columbia Falls and Conkelley. B We would also like to see the existing utility and transportation corridors crossing the Flathead National Forest officially designated as corridors and so illustrated on all maps.

Copies of your response should be sent to Earl Reinsel, Region 1, Missoula, and to George Eskridge and Randy Moy.

JOHooson:mra (WP-EVH-7155E)

FEB 11 1985

PP&B ___ 19__
Reid ___ Larson ___
Kakich ___ Mertz ___
Hutcheson ___ Cook ___
Bel[illegible] ___ Raettig ___
[illegible] ___ Janke ___
Cosvo[illegible]h ___ Furman ___
Treve[illegible] ___ Miles ___
Tribe ___ Fletcher ___
Donahue ___ Mann ___
McManus ___ Timko ___
Heist ___ Rollson ___
Ranse[illegible] ___ Fraser ___
Super ___ Buys ___
Helms ___

cc:
C. Clark - E
M. Holm - EH
D. Porter - EOF
E. Fischer - EOFA
R. Fox - EPG
G. Parks - ET
M. Johns - ETJ
F. Worth/N. Demond - ETJF
W. Kvarsten - EV
G. Eskridge - OKK
R. Moy - OK/Helena
Circ. File - EV
Official File - EVH

Earl Reinsel, Region 1
Federal Building
Missoula, MT 59807

U-1002

United States Department of the Interior
BUREAU OF MINES
WESTERN FIELD OPERATIONS CENTER
EAST 360 3RD AVENUE
SPOKANE, WASHINGTON 99202

DEC 24 1984

December 18, 1984

Mr. Edgar B. Brannon, Jr.
Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, Montana 59901

Dear Mr. Brannon:

RE: 1920
DRAFT ENVIRONMENTAL IMPACT STATEMENT AND PROPOSED FOREST PLAN
SUPPLEMENT FOR THE FLATHEAD NATIONAL FOREST, MONTANA

Our review of the Draft Environmental Impact Statement (DEIS) and Proposed Forest Plan Supplement for the Flathead National Forest has found these documents provide inadequate mineral information.

Areas east of Hungry Horse Reservoir acknowledged to have potential for stratabound copper-silver deposits in USGS OF 78-295 have not been considered in any of the plans. The same USGS report also discusses copper-silver occurrences in areas east of Holland Lake, where the resources may occur in veins and shear zones associated with dolomitic carbonate rocks. An example of this is the Copper Angel Prospect (USGS OF 78-295, p. 186).

The report appears to indicate that the Forest Service is placing such severe surface restrictions on most of the land that exploration is effectively being closed out on existing leases.

Sincerely,

D'Arcy P. Banister, Supervisor
Minerals Involvement Section

RESPONSE

Appendix D of the EIS includes an inventory of mineral potential. Since no commercial-size nonenergy mineral deposits have been discovered on the Flathead National Forest in the last 80 years, nonenergy minerals appear to have minimal value and potential. The Forest Plan, however, encourages responsible exploration and development on mineral resources in areas not congressionally restricted. The existing administrative withdrawals are minimal in size and are being reviewed for revocation.

Existing oil and gas leases have a variety of stipulations to protect known and existing surface resources. These stipulations were made known to the leasees prior to accepting the leases. We do not feel that special and valuable surface resources should be foregone to permit less expensive exploration for minerals that may not exist.

U-1010-L

RECEIVED
MAY 21 1985
FLATHEAD N.F.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Endangered Species, Field Office
Federal Bldg., U.S. Courthouse
301 South Park
P.O. Box 10023
Helena, Montana 59626

IN REPLY REFER TO:
6-1-83-F-003

May 15, 1985

Tom Coston
Regional Forester
U.S. Forest Service
Region 1
Federal Building
Box 7669
Missoula, MT. 59807

Dear Mr. Coston:

This is the Fish & Wildlife Service's (FWS) biological opinion prepared in response to your February 7, 1985 request to re-initiate formal consultation on the Flathead National Forest Proposed Plan. Consultation was first initiated on March 2, 1983 but was suspended on May 17, 1983 at your request so that direction provided in the Northern Region Grizzly Bear Action Plan could be incorporated into the Forest Plan. The FWS has examined the proposed plan in accordance with the Section 7 Interagency Cooperation Regulations (50 CFR 402, 43 FR 870) and the Endangered Species Act, as amended. This biological opinion refers only to the potential effects on threatened and endangered species and not the overall environmental acceptability of the proposed action.

Project Description

The proposed Flathead Forest Plan sets forth Forest- wide goals and objectives, land use allocations, management area prescriptions, standards and guidelines, and monitoring and evaluation requirements to establish direction for management of the Flathead National Forest.

Biological Opinion

It is the FWS biological opinion that implementation of the proposed Flathead Forest Plan is not likely to jeopardize the continued existance of the grizzly bear(Ursus arctos horribilis), gray wolf(Canis lupus), bald eagle (Haliaeetus leucocephalus) or peregrine falcon (Falco peregrinus).

RESPONSE

Response starts on second page.

Basis of Opinion

Grizzly Bear:

In this consultation, the FWS has reviewed the Forest Plan to determine if the allocation of land resources wil. preclude the survival and recovery of the grizzly bear and whether the management areas and their management direction and guidelines will provide for the recovery of the grizzly.

While the Forest Plan projects the amount of grazing, timber to be harvested, and facilities to be constructed as well as the acres to be developed in the management areas, it is impossible to: (1) identify site specific impacts of programs or activities; (2) relate specific project impacts to specific biological components of grizzly habitat and how they will affect the manner in which grizzlies use an affected area; (3) identify cumulative impacts; or (4) predict the degree of compliance/coordination with grizzly bear management prescriptions and guidelines. Therefore, it is impossible through one consultation to render a biological opinion on all programming and activities identified in the Forest Plan. Thus, additional consultation will be required on each program activity or project that the Forest Service determines may affect threatened and endangered species at the time it is designed and implemented.

A

To assure the viability of the Northern Continental Divide Grizzly Bear (NCDGB) population and habitat, Forest activities must be at a level and conducted in a manner to assure that (1) bears are not adversely impacted directly, indirectly, or cumulatively; (2) important habitat components are not adversely modified or destroyed; and (3) that sufficient space is left undisturbed from detrimental human activities to meet the biological requirements of grizzly bears. These objectives can be met in the Forest planning process by: (1) allocating sufficient space to accommodate grizzly recovery in which grizzly management is the primary use or grizzly bear supportive allocations are made, and (2) prescribing in areas of occupied grizzly habitat that have non-supportive allocations sufficient grizzly prescriptions to assure that the activities are made compatible with the biological requirements of the bear.

The lands allocated to grizzly bear habitat management (management areas 11, 11A, 11B, and 11C), stratification of occupied grizzly bear habitat into management situations 1, 2, and 3, and implementation of their attendant management guidelines provide a process to assure that the above objectives are met. We believe that if the occupied habitat is managed in accordance with the direction for MS1,

B

RESPONSE TO U.S. FISH & WILDLIFE SERVICE (Continued)

A. **The Flathead National Forest plans to consult actively with the FWS (U.S. Fish and Wildlife Service) when developing annual programs and specific projects in occupied threatened and endangered species habitat.**

B. **Guidelines for Management Situations 1, 2, and 3 are built into the Forest Plan in Chapter II under Forest-wide Standards for Threatened and Endangered Species. These standards will be followed in all management activities.**

2 and 3 and that human/bear conflicts are minimized so as to prevent human-induced mortalities, the grizzly population will respond by expressing the parameters identified for recovery in the Grizzly Bear Recovery Plan. Thus, this opinion is contingent upon the guidelines for MS1, 2, and 3 being fully implemented and that the stratification submitted in this consultation remains in effect.

B

An area of particular concern in this consultation, however, is that the Forest Plan not project a level of timber harvesting that would be incompatible with grizzly bear management objectives e.g. the volume target for timber must not preclude recovery. This means that the 10 - year timber harvest schedule must be evaluated and adjusted, if necessary, to assure that recovery of the bear can be accomplished.

After the habitat stratification had been completed and guidelines developed for the Flathead Forest we requested on March 22, 1985 the 10-year timber harvest schedule that may have been readjusted as a result of application of the grizzly guidelines. Review and application of the guidelines by the Glacier View Ranger District (GVRD) personnel showed that in fact the GVRD timber sale program required some readjustment in order to comply with the guidelines and direction for MS1. On March 29, 1985 the Flathead Forest Supervisor responded to our request by stating that a 10 - year timber sale schedule for the first decade was not completed and that the "final" 10 - year sale plan could not be completed until they had received our biological opinion.

In view of the significance of scheduling timber sales in time and space to ensure that the spacial needs of the grizzly are met and that the cumulative impacts are within an acceptable threshold, we are providing additional criteria in the Recommendation Section of this opinion that the Forest may find helpful in establishing an acceptable timber sale program. Through informal consultation and formal consultation if necessary, we will review with the Forest the 10 - year sale program when it is completed.

C

A second area of concern is the extent of grizzly habitat that will be roaded as a result of the timber sale program. The miles of road to be constructed is a function of the acres scheduled for timber harvest and the mix of logging systems employed. As of 1980 there were 3,146 miles of existing roads on the Forest (1.6 miles per square mile based on 1,961 square miles outside wilderness designations, Forest Plan page VI-31). The proposed plan projects an additional 2,881 miles to be constructed bringing the total miles of road on the Forest to 6,027 or an average road density at full development of 3.1 miles per square mile. The road density based on acres suitable for timber management will be 5.4 - 5.6 miles per square mile.

D

RESPONSE TO U.S. FISH & WILDLIFE SERVICE (Continued)

C. **The 10-year timber sale harvest schedule (found in Appendix H of the Forest Plan) has been provided for FWS evaluation and will be adjusted as necessary to achieve grizzly bear recovery.**

D. **These road density guidelines will be considered by our wildlife biologists when preparing their biological evaluations for proposed projects in occupied habitats.**

The grizzly bear guidelines state that "road management will be conducted to assist in meeting grizzly bear management goals. When warrented, roads will be closed seasonally or year long and where appropriate, area closures will be applied. Transportation plans and travel plans as well as individual project road systems will be evaluated regarding their impacts on habitat effectiveness". Grizzly bear habitat management goals will eventually be established for each bear management unit now being identified through development of the cumulative effects analysis (CEA) model and will be expressed as a percent habitat effectiveness needed to recover the grizzly. The CEA model will help identify an open road density that is compatible with the bear management objectives. However, until the CEA model is operational, we recommend that in the interim an open road density of 1 mile per square mile of habitat or less be maintained in MS1 and approximately 2 miles per square mile of habitat or less be maintained in MS2. The projected road densities in the Forest Plan clearly indicate that a substantial road closure program will be required to meet grizzly management objectives.

D

Gray Wolf:

Managing for wolf recovery by incorporating into the Forest Plan the wolf management zone concept outlined in the draft revised Northern Rocky Mountain Wolf Recovery Plan represents a positive conservation measure. Recognition of the management zones and their definitions will help assure that activities on the Forest are coordinated with wolf management objectives so as not to jeopardize the gray wolf. The FWS supports the habitat management direction in the gray wolf guidelines for Flathead National Forest. However, given that pack activity presently exists on the Flathead and that there is an on-going research program involving radio telemetry techniques, we believe that additional detail should be given to the guidelines to assure that adequate protection is given to denning and rendezvous activities. Our recommendations are presented in the Recommendation Section of this opinion. As more information is gathered from the research program, the guidelines should be reviewed and revised accordingly.

E

Two major factors in managing for wolf recovery include: (1) the maintenance of a year-round prey base (primarily deer, elk, moose, and beaver) and (2) avoidance of wolf/human conflicts/encounters that result in mortality. The proposed northwest Montana wolf recovery area generally coincides with the NCDGBE. Review of the grizzly bear guidelines and those for coordinating elk and timber management (Coordinating Elk and Timber Manage-

RESPONSE TO U.S. FISH AND WILDLIFE SERVICE (Continued)

E. Your recommended change for denning and rendezvous activities has been included in the gray wolf guidelines in the Forest Plan. We will continue to monitor research efforts to incorporate new data into management decisions.

ment-- Final Report of the Montana Cooperative Elk-Logging Study 1970-1985) indicate that the two are very similar. Thus, the management direction and guidelines developed for grizzlies on the Flathead National Forest will also have direct beneficial effects on the wolf. This direction plus the Forest-wide guidelines for elk and riparian habitat and the management areas established for whitetailed deer, mule deer and elk winter habitat helps ensure that a year-round prey base for wolves is maintained and security provided.

E

Peregrine Falcon:

Available data indicate that there is at least one historic peregrine falcon eyrie on the Flathead NF. Although there are no known active eyries on or adjacent to the Flathead NF at this time, the potential exists for peregrine falcons to reoccupy historic sites.

Peregrine reintroduction efforts are currently underway in Montana, Idaho, Wyoming, Colorado, and Utah. In 1984, peregrines bred and fledged young at one site in southwest Montana and one site in northwest Wyoming. These two pairs of peregrines represent the only known breeding peregrines in Montana and Wyoming since the late 1970's. All four adults were captive bred and reintroduced birds. Peregrines are extremely mobile birds: a subadult female hacked in southern Colorado spent the next summer at a hack site in northwest Wyoming. The possibility of peregrines reoccupying historic sites on the Flathead NF needs to be considered in project planning. We recommend the Flathead NF work with Ron Escano in your Regional Office regarding annual reoccupancy surveys of historic eyries on the Flathead NF. Although peregrine falcon reintroduction plans for Montana do not include hacking birds on the Flathead NF during the next 5-10 years, we recommend that the Flathead NF develop a management/contingency plan so that you will be prepared to address peregrine recovery, should birds become reestablished on the Flathead NF.

The recovery plan for the Rocky Mountain Southwest population of the peregrine falcon is currently under revision and scheduled for completion in the next few months.

F

RESPONSE TO U.S. FISH & WILDLIFE SERVICE (Continued)

F. The Monitoring and Evaluation chapter in the Forest Plan provides for surveys of nesting habitat. If peregrine falcons reestablish themselves, we will develop a contingency plan to assist recovery.

Bald Eagle:

Bald eagle populations have been increasing in western Montana since 1980 when intensive eagle nesting surveys were initiated. Coordinated winter trend surveys began in 1979. Although peak numbers of bald eagles occur in Montana during spring and fall migrations; winter distribution is not well understood, and specific winter roosts, feeding areas and migration corridors, are not well documented.

Because eagles are year-round residents on and near the Flathead NF, activities on the Flathead NF have the potential to either beneficially or adversely affect them. While human caused mortality factors such as shooting, poisoning, and electrocutions continue to threaten the bald eagle; the loss of habitat continues to be the most significant long term threat to the bald eagle, and should be carefully evaluated in long term forest management planning.

The Pacific States Bald Eagle Recovery Plan is undergoing agency review. The final recovery plan is scheduled to be out in fiscal year 1985. The primary objective in the recovery plan is to provide secure habitat, both for breeding and wintering populations of bald eagles. Efforts have been underway since 1982 to develop the Montana Bald Eagle Management Plan (MBEMP) under the direction of the interagency Montana Bald Eagle Working Group. The purpose of the MBEMP is to implement the recovery plan on a local basis in Montana. The MBEMP is being prepared for agency review, and should be available as a working document for land management agencies in Montana within the next year. We recommend that you consult the MBEMP and working group members when developing specific activities and programs under the Flathead Plan that have the potential to affect the eagle.

Identification of winter roosts, feeding areas, and spring and fall migration routes need to be completed so that effects of Flathead NF activities and programs can be adequately evaluated in relation to the bald eagle. Without documentation of such areas, impacts of logging, recreational developments, etc. cannot be fully evaluated. The significance of Flathead NF resource allocations to protect and maintain habitat for wintering populations of eagles should not be understated. A reasonable assumption and prediction can be made that the condition of bald eagles that return to breeding sites in the late winter or early spring will directly influence their breeding success. And obviously, eagles that die during the winter due to inadequate food and/or shelter will not contribute further to the recovery of the species.

G

RESPONSE TO U.S. FISH AND WILDLIFE SERVICE (Continued)

G. We will consult the Montana Bald Eagle Management Plan and working group members to assure coordination of project activity and bald eagle management.

Recommendations

Grizzly Bear:

The following criteria are presented to assist in scheduling timber sales in time and space for the 10-year timber sale schedule. The criteria were developed to apply more specific direction with respect to (1) duration of activities, (2) timing of re-entry, and (3) definition for security areas. The criteria, if applied, will help prevent the timber program from coming into direct conflict with grizzly recovery objectives requiring major modifications in the scheduling of sales and adjustments in timber volume targets. The CEA model when available, will help validate the level of harvest scheduled or show where adjustments can be made.

Criteria for:

1. Duration of activity
   - A. In MS1-- restrict sale activities to no longer than 3 consecutive years
   - B. In MS2-- restrict sale activities to no longer than 5 consecutive years
2. Re-entry
   - A. In MS1-- one entry per decade
   - B. In MS2-- (a) a minimum of 2 years inactivity following 1-3 years of consecutive activity, (b) a minimum of 5 years of inactivity following 4-5 years of consecutive activity
   - C. For both MS1 and 2, re-entry should not occur unless 40% or more of the drainage can be maintained in cover (20% hiding, 20% thermal, 10+% in either hiding or thermal cover) distributed evenly throughout the area
3. Security Areas
   - A. In both MS1 and 2 provide security areas immediately adjacent to the influence zone of the project area on a site by site basis. Security areas typically should be 5,000 acres or larger (or contain a similar compliment of components that existed in the disturbance zone) and be in areas that are roadless or where the open road density is one mile per square mile or less.

H

RESPONSE TO U.S. FISH AND WILDLIFE SERVICE (Continued)

H. These criteria will be considered by our wildlife biologists in preparing the biological evaluations for proposed projects in occupied grizzly bear and gray wolf habitats.

Gray Wolf:

The following criteria are provided to assist in designing timber sales to assure adequate protection to dennng and rendezvous activities and to key habitat components of the wolf's prey species.

1. Logging activities should not be conducted in or near the following areas at certain times of the year: (a) within one mile radius of known or highly suspected wolf whelping dens and initial rendezvous sites 15 March-1 July; (b) ungulate calving/fawning areas 1 May - 15 July; and (c) crucial ungulate winter ranges 1 December - 15 April. The dates and locations given may vary and should be based on the current ongoing wolf research.

H

This completes the FWS biological opinion on the proposed Flathead Forest Plan. If the proposed plan should change significantly resulting in impacts not considered in this biological opinion consultation should be reinitiated. Your cooperation and interest in meeting our joint responsibility under the Endangered Species Act is appreciated.

Sincerely,

Wayne G. Brewster

Wayne G. Brewster
Field Supervisor
Endangered Species

cc: Director, FWS, Washington D.C. (OES)
Regional Director, FWS (FA/SE), Denver, CO.
Grizzly Bear Recovery Coordinator
Field Supervisor, ES, FWS, Billings, MT.
Forest Supervisor, Flathead NF

M-007

United States Department of the Interior
NATIONAL PARK SERVICE
GLACIER NATIONAL PARK
WEST GLACIER, MONTANA 59936

IN REPLY REFER TO:
N2219

RECEIVED
JUN 1 0 1983
FLATHEAD N.F.

June 7, 1983

Mr. Robert Hensler
Flathead National Forest
P.O. Box 147
Kalispell, Montana 59901

Dear Bob:

I thought it might be helpful to put some of my thoughts on the forest plan in writing. I've been through the document a number of times and discussed its contents with other wildlife biologists. My comments generally relate to the concept of natural resources management and may be somewhat difficult to apply to specific parts of the plan. Hopefully, you will find them useful as you enter the review and revision process.

First, may I say that I'm impressed with the scope of the plan and the management process projected for the coming years. I found few stones unturned and many of my initial questions were answered by repeat readings and/or referring to the environmental impact statement. However, it remains quite possible that some of my comments still miss the boat and should be ignored.

Since natural resources management is generally based on an inadequate amount of knowledge, the only legitimate way to approach it is on an experimental basis. The plan sets the wheels for this concept in motion and, as such, is defendable as a management concept. However, the concept needs all parts in place and functioning or it won't work. Thus, monitoring and evaluation are critical components which must be implemented if the plan is to be successful. The plan itself does not assure implementation nor does it project the kind of intensity that may be necessary to measure effects and redirect effort as needed over time.

Resources management should also operate from some form of baseline condition. Where have we been, where are we now, and where are we going seem to be important questions in this regard. Without some expression of baseline condition, past or current, and quantitative goals relating to those conditions, monitoring and evaluation become somewhat academic. Baseline information is essential to the plan and can take numerous forms.

A

Going-to-the-Sun Road
50 Years
1933-1983

RESPONSE

A. The Forest Plan recognizes the importance of monitoring and evaluation of management activities. We are required by law to monitor for compliance with the Forest Plan. The Forest Plan lists the monitoring intensity and the limits which, if exceeded, would cause the problem to be corrected or the activity to be stopped.

The Forest Plan describes the desired future condition. We have base data or records of current condition on our resources and these will be used to measure change resulting from future activities.

Measures of habitat diversity would be a good place to start. Levels of acceptable change should be related to baseline data rather than percent deviation from a trend line. A

The plan directs management on the basis of local area or site conditions. That puts management where it should be and will serve to assure environmental protection. However, I found it difficult to assess effects of management on one area relative to that on another. For example, winter ranges for elk seem to be addressed appropriately, but are summer rages going to remain in adequate supply? Or, how will wilderness periphery zones and their management influence the wilderness itself? Area synergizm may be a difficult concept to grasp but should probably not be completely ignored. Perhaps one way to get at this problem is through the baseline data, quantitative goals, monitoring/evaluation process. Project or hypothesize effects, take your best management shot, and implement the program.

Synergistic management can also be extended beyond the forest boundary. Species such as grizzly bears and wolverine require large chunks of habitat which frequently extend across agency boundaries. Joint management is a real possibility in these cases and its not unrealistic to expect application of multiple management goals to be successful. With this in mind, the relationship of the park as a large natural area is an appropriate consideration in the forest plan. I would suggest that areas, species, and/or processes (such as fire) in need of joint management be identified in the plan and programs proposed to address specific situations. B

Going a step farther, both the park and forest are located in a unique geographic position from a genetic viewpoint. It seems logical that habitat corridors between the park and forest be maintained to assure gene flow among regional wildlife populations. In this case, planning may be the only way that insularization of habitat components can be averted. In a broader sense, the same concept applies to the entire region. This area is a critical link between the northern mountains in Canada and similar habitats to the south (of course, the same could be said for any portion of the mountain chain). As such, there must be some assurance of habitat continuity for all species along with species conservation measures that permit free movement.

A point which you might consider rather picky is that of elk habitat management. One could easily get the impression that good elk habitat management is good for every other species. That may or may not be true depending on viewpoint, goals and individual species. Certainly, in a dynamic forest system, each species will have an optimum condition to which it will respond with healthy populations. Seral status and interspersions will be among the dominant factors in determining those conditions. In turn, each species will respond differently to varios combinations of

RESPONSE TO GLACIER NATIONAL PARK (Continued)

B. We recognize that the year-round habitat requirements of elk and mule deer differ, however, their winter habitats almost completely overlap. We chose to manage the two species together and designate 20 percent of the forage to mule deer and 80 percent to elk. The direction for vegetative management was geared to elk as it was felt the elk required more cover than mule deer which tend to winter in very steep, rocky situations. We took the conservative approach to management.

The Forest feels summer ranges will remain in adequate supply.

We have not specified wilderness periphery zones. Areas adjacent to wilderness will have some influence depending on the type of management of the adjacent area. We cannot buffer all areas from adjacent management activities unless all areas were managed the same. Management for grizzly bear should be similar among all land management agencies or as outlined by the Interagency Grizzly Bear Committee.

these and other important factors. The point is, without quantitative goals and baseline data, it's really difficult to determine if the elk concept will do what is projected. On the other hand, it's very possible that it will do just the right thing since it benefits from a mixture of habitats. B

Finally, a brief word or two about grizzly bears. Current data seem to say that an expansion of human use in grizzly bear habitats will lead to increasing losses of bears from various causes. Habitat loss is the not the reason, it is interaction with people who use the habitat. In the absence of mitigating management, the plan should provide much stronger justification for expanding access into grizzly bear habitats. The grizzly bear emphasis areas are unique, not for number of bears present, but for the management opportunity they provide. They are an experimental setup, just the thing needed to help reveal a proper direction for perpetuation of the species in a multiple use environment. Monitoring and evaluation are critical in this case with cost likely to be high. C

I appreciate the chance to have a look at the plan. Call or drop a note if you have any questions. I'd be happy to discuss any of these or other points in greater detail.

Sincerely,

Cliff

Clifford J. Martinka
Supervisory Research Biologist

RESPONSE TO GLACIER NATIONAL PARK (Continued)

C. The Forest Plan contains very specific management standards, guidelines for the management of all activities in relationship to grizzly bears.

U-1003

United States Department of the Interior
NATIONAL PARK SERVICE
GLACIER NATIONAL PARK
WEST GLACIER, MONTANA 59936

RECEIVED
JAN 29
FLATHEAD N.F.

IN REPLY REFER TO
L7617

January 25, 1985

Memorandum

To: Regional Director, Rocky Mountain Region

From: Superintendent, Glacier

Subject: Review of Draft EIS Supplement and Proposed Forest Plan Supplement, Flathead National Forest, Montana.

We have reviewed the subject documents and have the following comments:

1. Several of our comments on the original plan which we made in May 1983 have not been addressed. They are reiterated as follows:

   a. We are concerned that the plan may erroneously assume that timber harvesting improves bear habitat. While timber harvesting probably improves habitat in terms of increased food production, we feel that it also degrades this habitat due to the introduction of access roads and increased exposure. A

   b. The effect of forest management actions on visual qualities seen from Glacier National Park should be addressed. Flathead National Forest lands are often a critical part of the view from park's roads, trails and developed areas. B

2. Page S-19, "Oil and Gas", the last paragraph notes "Under all alternatives, oil and gas activities would adversely affect the long-term quality of the roadless resource if a discovery is made and a development phase occurs." We feel that this is also true of areas not designated "roadless", such as those properties adjoining Glacier National Park. It is also our opinion that even one well would constitute a major Federal action requiring a full EIS. The process of utilizing piece-meal assessments during incremental oil and gas development does not adequately address the true situation. Developing an EIS after discovery occurs does not adequately allow for the consideration of impacts and the possibility of taking alternative actions to avoid adverse effects. C

3. Page II-41, Alternative 11, the Proposed Action, the Grizzly Bear Potential is 201, yet as footnoted and as written in E-3, "The Flathead D

RESPONSE

A. The Forest Plan proposes to enter very few inventoried roadless area acres. One hundred percent of the arterial roads and 95 percent of the collector roads have already been constructed. The remaining low standard roads to be constructed will be primarily timber sale roads. Ninety-five percent of our inventoried roadless areas will remain unroaded during the next decade. Nearly all of the RARE II areas on the Flathead National Forest have been proposed for management emphasis which do not require roads.

All animals require security, food, and water. Attaining proper balance is important.

The Draft Forest Plan proposed habitat improvement in the Trail Creek Grizzly Bear Management Area for the following reasons:

> Information was available on site as to how bear foods could be produced using various silvicultural techniques.
>
> Radio telemetered bears were available to determine if and how these bears would or would not use the bear foods produced.

There was limited acceptance of this proposal; thus, habitat improvement, except for research, was removed from the management direction for the Trail Creek Grizzly Bear Management Area for the first decade. We dropped the reference to Trail Creek having the "best" grizzly bear habitat in the Continental United States.

B. We have considered foreground views from the Middle and North Forks of the Flathead River's Wild and Scenic River corridors, and the highways and roads in their drainages. We felt that it is not prudent management of National Forest System land to strive for an unaltered landscape in the lower portions of westside drainages of the North Fork as seen (viewed) from drainages within Glacier National Park. This is the same consideration we have for views from within the Great Bear Wilderness area, looking west to the west side of the Hungry Horse Reservoir where timber management activities are evident.

C. It is impractical to prepare, at this time, an EIS covering all the possibilities of oil and gas development activities. Each lease specifies areas of No Surface Occupancy and the leases are accepted under those conditions. Assessments during incremental oil and gas development are based on up-to-date and a consistent level of information and data.

a recovered population." Appendix E "Grizzly Bear Management Guidelines"

Year of the Visitor

The reference to 201 potential grizzly bears is an output value from the FORPLAN run based on coefficients in the model. There is no way that values closer than this (3 percent off) can be expected in this type of evaluation, especially when estimates of total bears varies by 100 percent.

---

describes how the Flathead National Forest is going to strive to meet its goals and the recovery goals of the NCDE, yet Alternative 11 potential, which we understand to be maximum potential, is 6 bears short. D

4. Page II-69. Document does not go into much detail in analyzing potential impacts to fish and water quality. Treatment is very general, referring only to projected upward/downward trends in populations size(s) of "trout" in relation to the various alternatives. Altogether, about 2 pages, including one small graph, address the fishery. Due to the declining status of the indigenous cutthroat trout and bull char throughout their remaining ranges, we feel that the Flathead National Forest is critical relative to the future of these species. Reduced creel limits and new knowledge concerning how site selective the chars are for spawning habitat tend to underscore the overall fragility of these species. We are concerned about the general treatment of these species and lack of specifics on the impacts on spawning habitat. Forest management practices especially roads construction constitute a significant influence on spawning habitat. E

5. Page II-81, III-18. We feel the statement that the Trail Creek Geographic Unit contains the highest known grizzly bear population in the Continental U.S. is not accurate and should be deleted. This unit is comparable in size to Bear Valley, Many Glacier Valley and the Apgar Mountains in Glacier National Park, and we feel that all of these areas are too small to support such a statement. We support the recommendation that this unit be administratively classified to support sound bear management. A

6. Page III-10. We agree with the statement, "Scenic quality is one of the major elements in a wilderness setting. Man's activities that may detract or minimize the quality of views, such as timber harvesting activities (road construction, clearcuts) should not be visible inside wilderness", describing the visual resource.

   However, the EIS should also refer to and protect visual resources of Glacier National Park, since it is also a proposed wilderness. B

7. On page III-14, we disagree with the statement, "In the long-term wilderness designation may result in less than optimal grizzly bear habitat." Examples are Glacier and Yellowstone National Parks. Manipulation, as discussed in the context of this EIS, revolves around two activities, i.e., timber and oil and gas development. We feel that oil and gas activities will cause adverse impacts on bears. Timber harvest can have some beneficial effects, but often have adverse effects due to roads and physical intrusions. In a wilderness area, natural fire takes the place of logging and does alter habitat "naturally" without many intrusions such as roads. F

8. In light of the recent passage of the appropriations bill, which contained Senator McClure's rider stating that a forest plan must address grizzly G

RESPONSE TO GLACIER NATIONAL PARK (Continued)

E. Maintaining high quality fish habitat is a major objective of the Forest Plan. The Monitoring Plan specifies that water flow, sediment yield (suspended and bed load), and streambed sediment levels will be measured to determine the effects of forest management. If the limits of outputs and effects which are specified in the Monitoring Plan are exceeded, the activity will be altered or stopped. Best Management Practices have also been included in the Forest Plan. They outline activities which will maintain water quality and fish habitat.

F. The reason for our statement about wilderness is that we feel habitat can be improved more through habitat manipulation than through natural means. We have specified one area on the Flathead National Forest where grizzly bear management will be the primary objective. Over half of the Forest outside of wilderness will not be managed for timber harvest. The areas that are harvested can be closed to human intervention if grizzly bear or their habitat are impacted.

G. Transfer of bears within the Northern Continental Divide Ecosystem is not considered augmentation. We have no plans to accept grizzly bears from outside the ecosystem.

bear augmentation prior to any grizzly being transferred to that forest, it is recommended that grizzly bear augmentation be included. G

We appreciate the opportunity to comment on this plan. Should you have any questions, please contact Mr. Robert Dunkley of our staff.

(Sgd) Robert C. Haraden

Robert C. Haraden

cc:
Mr. Joe Riddle, RMR - PC
Mr. Gary Gregory, Glacier
Mr. Leo Marnell, Glacier
Mr. Warren Illi, Flathead National Forest

[redacted]

S-015

United States Department of the Interior
OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL PROJECT REVIEW
Room 688, Building 67
Denver Federal Center
Denver CO 80225-0007

RECEIVED
JUL 18 1983
FLATHEAD N.F.

IN REPLY REFER TO:
ER 83/328

JUL 13 1983

Mr. John L. Emerson
Forest Supervisor, Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

Dear Mr. Emerson:

This is in response to your request for the Department of the Interior's review and comments on the proposed Forest Plan and draft environmental impact statement for the Flathead National Forest, Montana.

PROPOSED FOREST PLAN

General

A

The Plan should stress the importance of a resource monitoring program which can change as more is learned about the resources. Such a program should enable the Forest Service to determine the success of various management actions and implement different ones as needed. A key component of such a program should be the identification of the historical resource condition rather than current condition to serve as baseline comparison data.

Endangered and Threatened Species

B

The Forest Plan as proposed does not present adequate grizzly bear management guidelines to assure the recovery of the grizzly bear. Forest-wide grizzly bear management guidelines and the grizzly bear management areas (except for management area 11C--the Swan Valley Movement Corridor) are confined to grizzly bear density zone 1, an area of approximately 312 square miles. Thus, the remaining occupied habitat is without specific guidelines needed to coordinate other land uses with the biological requirements of the bear. The occupied habitat should be stratified to reflect the importance of the habitat areas to the bear and attendant management direction set to the stratification.

The density zone approach has been used on the Flathead National Forest as a means of estimating potential numbers of bears that the Forest is capable of producing under various management alternatives. However, the zones as established for the Forest do not equate to the stratification of grizzly habitat used in the Yellowstone Ecosystem. In addition, management direction set forth in the proposed Plan leaves large areas of important grizzly habitat with little or no grizzly bear management emphasis or direction. We recommend application of the Guidelines for grizzly bear management that have been developed and applied in the Yellowstone Ecosystem, so that subsequent management direction and allocations are directed toward and/or supportive of the recovery effort.

RESPONSE

A. Monitoring will be a key part of our efforts when the Forest Plan is implemented. Historical base lines will be utilized whenever they are available.

B. The Yellowstone Guidelines, modified slightly to fit the Flathead's ecosystem, was included as part of the Forest Plan. We recognize the loss of security that occurs with additional roading.

We are also concerned that the Plan may erroneously assume that timber harvesting improves bear habitat. While timber harvesting probably improves habitat in terms of increased food production, it also degrades this habitat due to the introduction of access roads and increased exposure. B

The Forest Service requested formal consultation on the grizzly bear and gray wolf pursuant to Section 7 of the ESA on March 2, 1983. In a letter dated May 17, 1983, the Forest Service requested that the FWS suspend the consultation until further notice is received. This would allow the Flathead National Forest to incorporate actions outlined in the Northern Region Grizzly Bear Action Plan issued by Region 1 of the Forest Service on May 10, 1983, into the proposed Forest Plan. The FWS will, therefore, delay issuance of a biological opinion until formal consultation is reinitiated by the Forest Service, and will continue to work with the Forest through informal consultation. C

Fish and Wildlife Resources

We recommend that the Plan provide specific guidance for the protection of riparian habitats, aquatic habitats, and old growth habitats.

Riparian habitats are extremely important to fish and wildlife. We believe that there should be more emphasis on managing riparian areas as fish and wildlife habitat, including specific restrictions on logging activities and road construction in these areas. In addition, it appears that aquatic habitats would be severely impacted through increased sediment loading in streams. We recommend more strigent controls on timber removal, road construction, and other land-disturbing activities than the post-harvest measures noted in the draft EIS, in order to decrease sediment yield into important fish spawning areas. D

The importance of old growth timber to a number of wildlife species has been noted in the (DEIS, IV-37). We recommend a more definitive analysis of the management of old growth timber. It may be necessary to place old growth timber under special management in some areas that have been subject to heavy timber cutting. E

The Plan should also address the issue of solid waste disposal on forest lands more fully. Emphasis should be placed on reducing the availability of unnatural food sources. F

Glacier National Park

The Forest Service should be complimented on their effects to coordinate with Glacier National Park throughout the planning process. This coordination has been thorough and has shown a high degree of respect for the park's values. The Park is basically supportive of the Forest Service's preferred alternative, but offers the following comments to address specific concerns.

The Plan should emphasize the importance of protecting wildlife corridors on the Middle Fork of the Flathead River as well as on the North Fork. These corridors are critical to allowing movement of such species as the grizzly bear and gray wolf between the National Forest and adjacent Glacier National Park lands. This movement enhances the genetic diversity aspect of the park in the context of its G

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW (Continued)

C. The Forest Plan has received a nonjeopardy opinion from the U.S. Fish and Wildlife Service.

D. More specific management standards have been incorporated into the Forest Plan.

E. Specific standards for management of old growth are included in the Forest Plan. One of the goals for our Management Area 12, covering 45,521 acres, is to emphasize old-growth habitat. In addition, our wilderness areas and roadless recreation areas will have hundreds of thousands of acres of old-growth potential.

F. Specific direction for solid refuse disposal is now found in the grizzly bear management guidelines and also in Best Management Practices for watershed management.

status as a World Biosphere Reserve. We feel that the importance of the Middle Fork area as a wildlife corridor outweights its relatively minor timber values compared to the total forest timber yield. G

The effect of forest management actions on visual qualities seen from Glacier National Park should be addressed. Flathead National Forest lands are often a critical part of the view from the park's roads, trails and developed areas. Also, we suggest that consideration should be given to the protection of natural resource values on private lands in critical resource areas between the Flathead National Forest and Glacier National Park. This protection could be accomplished through land exchanges, easements, or by working with local zoning authorities to assure compatible land uses. H

Hungry Horse Reservoir

The Bureau of Reclamation zone bordering the Bureau's Hungry Horse Reservoir has been designated as management area 7 in the Proposed Forest Plan. This is timber management with partial retention visual quality objectives. Implementation of the visual quality objective of partial retention keeps management activities visually subordinate to the characteristic landscape. We agree with this concept inasmuch as the maintenance of visual quality is of direct benefit to the recreational quality.

As stated in the Proposed Forest Plan, more developed recreation opportunities exist in the reservoir area than anywhere else on the Flathead Forest. The developed recreation sites include boat launch ramps, campground, and picnic area facilities. Public use is relatively high. Maintenance and repair of these facilities has been excellent in the past and should be continued at this level. I

The Bureau is currently conducting a Hungry Horse Powerplant Enlargement and Reregulating Reservoir study. The core elements in this study are (1) an increase of the power generating capacity at Hungry Horse Dam, and (2) the construction of a reregulating dam about 3 miles downstream. After review of these documents, we have determined that the forest management alternatives depicted in the document will not impact upon any future construction or operation resulting from this study.

DRAFT ENVIRONMENTAL IMPACT STATEMENT

We note that provision has been made for subsequent, site-specific environmental assessments or environmental impact statements, tiered from the Forest Plan EIS. This is most appropriate, since for many actions this EIS recognizes only the general types of impacts anticipated, not their extent or severity. Depending on location and/or timing, such future actions as timber harvest, oil and gas development will have significant impacts and require specific mitigation measures beyond the coverage of the Forest Plan EIS. We recommend that the final EIS define the categories of actions within the Forest which will likely require a subsequent EIS, and set forth the threshold criteria which would trigger preparation of a full EIS. J

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW (Continued)

G. A large portion of the North Fork has been set aside as a grizzly bear management area where grizzly bear habitat will be maintained and enhanced by implementing management and investment activities and controlling public access. The remainder of the North Fork and the Middle Fork are designated Situation 1 where grizzly bear habitat maintenance and improvement and grizzly/human conflict minimization will receive high management priority.

H. We have considered foreground views from the Middle and North Forks of the Flathead River's Wild and Scenic River corridors and the highways and roads in their drainages. We felt that it is not prudent management of National Forest System land to strive for an unaltered landscape in the lower portions of the North Fork as seen (viewed) from drainages within Glacier National Park. This is the same consideration we have for views from within the Great Bear Wilderness area, looking to the west side of the Hungry Horse Reservoir where timber management activities are evident.

I. The Forest Plan calls for full-service maintenance on all reservoir campgrounds.

J. The Monitoring Requirements included in the Forest Plan specify the acceptable variability and trends. If exceeded, action will be taken to correct or stop the activity causing the problem. The planning process is dynamic; i.e., amendments, updates, revisions of the Forest Plan and related documents will be made continually.

We recommend including a more detailed discussion of mitigation measures, directly correlated with the extent of severity of impacts. Just how these mitigation measures will be implemented should be specifically presented. Also related to NEPA, there should be a discussion of compliance with Executive Orders 11988 and 11990 (floodplains and wetlands). K

We also suggest that the environmental statement address ground-water impacts that would result from the various alternatives, particularly effects on aquifer recharge and on the related ground-water maintenance of the base flow or low flow of streams. Effects of road cuts on shallow ground-water flow should be considered. L

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW (Continued)

K. We have included detailed management standards rather than list extensive mitigating measures in the Forest Plan. Reference to compliance of these two Executive Orders is included in our Best Management Practices (see Chapter II of the Forest Plan under Forest-wide Standards for Water).

L. Ground water was not an issue which surfaced during the scoping phase of the planning process; therefore, we have not discussed this item. Our management standards dealing with surface water should, in general, care for ground water. Maintaining quality ground water is inherently considered in all Forest Service projects having potential for such impacts.

[redacted]
S-015

United States Department of the Interior
OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL PROJECT REVIEW
Room 688, Building 67
Denver Federal Center
Denver CO 80225-0007

JUL 2 2 1983
Flat. Nat'l. Forest

IN REPLY
REFER TO:

JUL 1 8 1983

ER 83/328

Mr. John L. Emerson
Forest Supervisor, Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

Dear Mr. Emerson:

The enclosed memorandum from the Bureau of Indian Affairs was received by this office after we sent you the Department's comments on the proposed Forest Plan and draft EIS.

To the extent possible, please consider these comments during your preparation of the final Plan and EIS.

Sincerely yours,

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

RESPONSE

Responses start on second page.

DEPARTMENT OF INTERIOR
RECEIVED
JUL 18 '83
OFFICE OF THE SECRETARY
DENVER, COLORADO

UNITED STATES GOVERNMENT

memorandum

DATE: JUL 14

REPLY TO ATTN OF: Branch of Land Services - Portland Area Office

SUBJECT: Review of Draft Environmental Statement, Proposed Forest Management Plan and Overview for Flathead National Forest, Montana (ER 83/328)

TO: Regional Environmental Officer, Denver

We have reviewed the subject statements and offer the following comments:

General Comment

It is noted that even though copies of the Flathead National Forest Plan and draft Environmental Impact Statement were sent to the Blackfeet Tribe and the Confederated Salish and Kootenai Tribes, no mention is made of the fact that the Flathead National Forest is aboriginal territory for these Tribes. Because of this, these Tribes have a vested property interest in Flathead National Forest lands. To our knowledge, no formal consultation has taken place with these Tribes concerning past or planned activities in this regard. This consultation is not only logical, it is clear that Indian tribes are tribal governments because they retain all aspects of their original sovereignty not otherwise given up or taken away by Congress. The President has recognized that tribal organizations are governments rather than interest groups and that the administration will deal with Indian tribes on a government-to-government basis. We suggest both the plan and draft statement be revised to include such a formal consultation process and to consider the beneficial results thereof. A

Treaty Rights

The Treaty of Hellgate, July 16, 1855, 12 Stat. 975, contains in Article III, the following wording:

> "as also the right of taking fish at all usual and accustomed places, in common with citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."

The courts have construed such language to mean that Indians have reserved to themselves, on all open and unclaimed aboriginal territory, the right to graze livestock and to carry on other mentioned activities in common with non-Indians.

The documents do not adequately address the importance of the Flathead National Forest and its management in providing habitat for the richest assemblage of big-game species in the United States. This is a significant national resource and may be as important to the public interest as the primary production of wood products. B

OPTIONAL FORM NO. 10
(REV. 1-80)
GSA FPMR (41 CFR) 101-11.6
5010-114

☆U.S. GPO: 1982-0-361-526/7604

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW (Continued)

A. Formal consultation has occurred and it is documented in the final EIS.

B. Fish and big-game habitat management is one of the primary resource management emphases on the Forest. The Forest Plan shows increased emphasis for wildlife species.

The management of Flathead National Forest does not depend upon the presence of substantial populations of big-game animals to insure production of wood products. However, those populations are dependent upon Flathead forest lands and management practices. B

More attention needs to be shown to consider the potential of increasing sustained production of harvestable big-game animals from forest lands.

As late as 1953 all of the forest lands within the South and Middle Forks of the Flathead and the Mission Mountains were considered as grizzly bear range with a few areas known locally to have more grizzlies. The Missions and the ridge between the South Fork and Middle Fork from US No. 2, south to Mount Baptiste were areas where grizzlies were considered more abundant. C

Specific Comments - Proposed Forest Plan

II. Forest Management Direction (PII-1)

This section should be expanded to include the following goal:

Provide a sustained yield of big-game animals that is responsive to local and regional recreation industry's needs and consistent with other forest management goals.

9. Change to read:

Curtail development and implementation of a road management program with maximum road-use restrictions and closures to protect wildlife resources. D

Forest Objectives (Page II-4)

Facilities

The objectives for road construction need reconsideration. The most significant public controversies in management practices on the forest have involved road construction. It is clear that roads result in significant adverse impacts on game populations. The Forest Service has an excellent opportunity to reverse that trend by recognizing the importance of solitude and safety on big-game animals and emphasizing a reduction in additional construction of roads and closures of existing roads. The Forest Service should enter into a Memorandum of Agreement with the Montana Department of Fish and Wildlife and Parks on location of new roads and closure of any road. The welfare of the wildlife on the Flathead National Forest is important nationally and its future should have recognized input of that nature to be considered in management of the forest resource. E

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW (Continued)

C. These are still key areas for grizzly bear management and will be managed as Management Situation 1 where the grizzly bear is a primary resource.

D. We feel the resource management goals are in line with our agency's multiple-use management charge. We will build more roads to complete the Forest transportation system and also close more roads for wildlife security. "Open" road mileage will not increase above current levels.

E. We coordinate very closely and cooperate with the Montana Department of Fish, Wildlife, and Parks on all activities affecting wildlife. They are actively involved in our road closure program.

The Montana Department of Fish and Wildlife and Parks is reponsible to the public for managing game populations and should, therefore, have a far greater role in forest management planning and decisions. E

Research Needs (Page II-6)

Add research to determine grizzly bear status in Bob Marshall and Mission Mountains Wildernesses. F

Land Adjustments (Page II-20)

2. Include: Tribal Council, Confederated Salish & Kootenai Tribes. G

Resource Element - Management Direction (Page III-3)

Roads

Include: Road construction will be curtailed in areas which have historically been recognized as significant big-game hunting areas. Road closures will be implemented to enhance production of big-game animals. H

(Page III-6):

Omit any plans to extend the Spotted Rear River Road to Silvertip Cabin for administrative purposes. I

Grizzly Bear Habitat (Page III-28)

In 1947 construction started on Hungry Horse Dam on the lower South Fork Flathead. At that time major logging activities had not commenced on either the Middle or South Forks of the Flathead or the Upper Swan Valley. The bear population flourished in those areas which had not been subjected to management. There is no evidence that Forest Service management practices has improved the habitat for grizzly bears. In fact just the opposite is true. Omit habitat enhancement from all forest plans. J

Resource Element Management Direction (Page III-30)

Provide and maintain grizzly bear habitat security by road closures to maintain a maximum open road density at the 1960 level. K

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW (Continued)

F. Our monitoring activities will give us an indication of the status of bears in these wildernesses. Research needs relating to grizzly bears have been identified and are included in the Forest Plan.

G. We concur with this concern due to impacts on their adjoining land and in recognition of the potential cultural resources. Each land exchange has a cultural resource evaluation prior to completing the project.

The Tribal Council will be included on a mailing list for receiving updates of the Landownership Adjustment Plan.

H. We feel that we have included sufficient direction and guidance to protect big-game animals.

I. The plans have been withdrawn.

J. Nearly all of these areas are in Grizzly Bear Management Situation 1 where the grizzly bear habitat will be maintained or improved and grizzly-human conflict minimization will receive high management priority. While there have been no formal studies, grizzly bears seem to be as abundant in occupied areas that are intensively managed as in areas that undergo minimal management and no timber harvests.

K. Grizzly bear management guidelines and the standards for Management Area 11C included in the Forest Plan adequately handle security for the grizzly bear by maintaining a maximum open road density at the 1981 level.

Mission Mountain Wilderness (Page III-69)

Coordinate all planning activities with the Tribal Council of the Confederated Salish and Kootenai Tribes. The Council has designated an area on the west side of the Mission Mountains adjacent to the west boundary of the wilderness area as a tribal wilderness area. This area is larger than the wilderness designation on the forest lands. Trespassing and poaching by non-Indians on tribal lands in the Mission Mountains is increasing as a result of more and easier access through Forest Service lands to the east. L

Big Game (Page VI-13)

This section should be expanded to include data to show hunter harvest of big game from forest lands since 1949. Data is available to show harvest from the South Fork of the Flathead, Bob Marshall Wilderness, North Fork of the Flathead, Swan Valley. This data should be presented with corresponding data on the number of miles of road access in the area harvested and the acreage of timber removed each year in the hunted areas. This correlation is important to identify affects of access and timber harvest on game populations and hunter success. M

Threatened and Endangered Species (Page VI-16)

We agree that most of the Flathead forest is essential grizzly bear habitat.

Data should be presented showing known acreage of occupied grizzly bear habitat in the 48 states south of the Canadian border. Data showing the percentage of this occupied grizzly range within the boundary of the Flathead National Forest should be shown. N

Roads (Page VI-30)

We highly recommend that new construction be initiated only if there is no other feasible method of access to timber areas. We highly recommend that all roads be closed unless it is shown to be of priority public interest that they be opened. O

In Summary

We believe the Forest Management Plan fails to adequately recognize a unique aspect of the forest which is as habitat for the big-game populations. The Flathead National Forest is unequalled among other forests for big-game production. Other forests may produce more timber, more forage for domestic stock, or produce more minerals. The forest as big-game habitat is a significant value. The management plan should emphasize production of big game. We understand the monetary value of the wildlife resources of the forest is more significant than presented in either document. Up-to-date values should be presented. P

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW (Continued)

L. We do coordinate activities with the Tribal Council.

M. We have and will continually assess the effects of various resource management activities on other resources. Access is only one aspect of management that can and does affect big-game population. Your comments imply that roads always mean reduced big-game populations; however, we now have record levels of big game, while also having more roads. Roads can, however, adversely impact wildlife if not properly built and managed.

N. This kind of data is included in the Grizzly Bear Recovery Plan prepared by the U.S. Fish and Wildlife Service. A map of the bear habitat on the Flathead National Forest is included in the Forest Plan.

O. Our Forest-wide management standards for grizzly bears specify that, "Road management will be conducted to assist in meeting grizzly bear habitat management goals." Roading is generally the only practical way to harvest timber and manage a Forest. Most new roads will be closed to general public use.

P. Our planning effort has dealt with the issues and concerns identified in the scoping phase of the planning process. As time passes, issues and concerns will change and so will our management to meet the new situations. Both wildlife and recreation are emphasized in the Forest Plan.

READEX FICHE best copy available

We recommend highly that additional emphasis be placed on sustained yield of wildlife resources to facilitate the recreation industry. This will require a different forest plan and impact statement. In view of the past history of public conflict with Forest Service management policies and programs and adverse impacts on habitat and wildlife populations, recognition of the unique aspect of the forest would bring credit to the Forest Service. P

Assistant Area Director
(Economic Development)

U-1006

United States Department of the Interior
OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL PROJECT REVIEW
Room 188, Building 67
Denver Federal Center
Denver, Colorado 80225

IN REPLY REFER TO:
ER 85/10

March 13, 1985

RECEIVED
[illegible]
Flat. Nat'l. For.

Mr. Edgar B. Brannon, Jr.
Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

Dear Mr. Brannon:

This is in response to your request for the Department of the Interior's review and comments on the Proposed Forest Plan Supplement and Draft Environmental Impact Statement (DEIS) Supplement for the Flathead National Forest, Montana.

You indicate that comments previously submitted on the draft published in 1983 are not reflected in the present documents. These comments, therefore, are in addition to our earlier submissions. The following comments refer to the DEIS Supplement.

GENERAL

Although the subject document is easy to read, it is difficult to interpret the real differences between some alternatives. Fish and wildlife resources are generally ill-defined, and impacts of the alternative activities on these resources are vaguely stated. References to the DEIS should be more specific so they can be more readily found. Including page numbers with each reference would have been helpful. Also, nested references to other alternatives creates confusion; e.g., alternative "C" is similar to alternative "B" which is similar to alternative "A." The implication is that alternative "C" is similar to "A," but upon examination this is not obvious. Plainly describing each alternative using the same criteria would facilitate comparisons. A

THREATENED AND ENDANGERED SPECIES

The proposed Plan and DEIS Supplements represent a considerable improvement over the previous drafts in their treatment of threatened and endangered species. We understand that the Forest Service has recently reinitiated formal consultation pursuant to Section 7 of the Endangered Species Act, and has met with the Fish and Wildlife Ser- vice to review these documents in detail. We also understand that, as a result of that meeting, the Forest Service is in the process of refining its analysis. Specific comments on threatened and endangered species will be provided through the Section 7 consultation process, which should be completed prior to approval of the Forest Plan and the results reflected in the final Plan and EIS. In the interim, we offer the following general comments regarding endangered species.

RESPONSE

A. These concerns have been rectified in the final EIS.

The statement (p III-14, last paragraph) that: "In the long-term, wilderness designation may result in less than optimal grizzly bear habitat." could be misinterpreted. "Manipulation," as discussed in the context of this DEIS, revolves around two activities, i.e., timber and oil and gas development, which will likely cause adverse impacts on bears. In a wilderness area, natural fire alters habitat "naturally," and wilderness status provides the necessary solitude and security from major disturbances of commodity development activities. The final EIS should recognize these beneficial results of wilderness designation. B

In light of recent Congressional direction, we suggest that a discussion of grizzly bear augmentation be included. C

FISH AND WILDLIFE

The wildlife portion (pages IV-5 and 6) of the Roadless Resource section is disjointed and difficult to interpret. Table IV-4 referenced to page IV-19 is actually on page IV-20. It is referenced on page IV-5 and should be moved to occur immediately after being referenced. Also, the table is not discussed adequately in the text. How the non-game "representative wildlife species" will be affected by each alternative is not addressed. A

No mention is made in the wildlife section or as a footnote to Table IV-4 that tables displayed on pages III-12 and B-32 provide supporting information. The title of Table IV-4 implies that the acreages displayed represent the amount of a plant community available on the entire forest, rather than just on the lands suitable for commercial timber harvest. The data displayed shows that all alternatives will cause the grass, forb, and shrub communities to increase and that the general-forest and old-growth communities will decrease in areal extent. By further implication, the table suggests that wildlife species dependent on old-growth and general-timber communities would also decline, while species found in the grass and shrub communities would increase.

We suggest that the "Effects on Wildlife" section on page IV-5 be expanded to include a concise statement of what the "representative" wildlife species actually represent, how they would be impacted by the various management alternatives, and what this means in terms of game and non-game wildlife. D

The document does not go into much detail in analyzing potential impacts to fish and water quality. Treatment is very general, referring only to projected upward/downward trends in populations size(s) of "trout" in relation to the various alternatives. Altogether, about two pages, including one small graph, address the fishery. Due to the declining status of the indigenous cutthroat trout and bull char throughout their remaining ranges, we believe that the Flathead National Forest is critical relative to the future of these species. Reduced catches and new knowledge concerning how site selective the chars are for spawning habitat tend to underscore the overall fragility of these species. We are concerned about the general treatment of these species and lack of specifics on the impacts on spawning habitat. Forest management practices, especially road construction, constitute a significant influence on spawning habitat. E

MINERALS

The last paragraph on page S-19 states "Under all alternatives, oil and gas activities would adversely affect the long-term quality of the roadless resource if a discovery is F

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW

B. Maintaining fish habitat is a major objective of the Fores Plan. The Monitoring Requirements specify that water flow, sediment yield (suspended and bed load), and streambed sedime levels will be measured to determine the effects of forest management. If the limits of outputs and effects which are specified in the Monitoring Requirements are exceeded, the activity will be altered or stopped. Best Management Practices have also been included in the Forest Plan. They outline activities which will maintain water quality and fish habitat.

C. Transfer of bears within the Northern Continental Divide Ecosystem is not considered augmentation.

D. The interpretation of the data presented was correct. Discussion of the indicator species has been clarified and expanded in the Forest Plan.

E. The modeling efforts reported in the Draft EIS were intended only for comparison of alternatives. The Flathead National Forest is in the process of gathering detailed information for a validation of the sediment prediction model which estimates the impacts of management activities on water quality and fish habitat.

All Forest projects will meet State water quality standards. Best Management Practices and special prescriptions as set forth in the Forest Plan will be followed. Management activities may cause short-term increases in sediment production, but these will be within the acceptable limits of the State water quality standards. Natural variations in water quality are typically much more severe than impacts caused by National Forest management.

made and a development phase occurs." We believe that this is also true of areas not designated "roadless," such as those properties adjoining Glacier National Park. It should be noted that even one well could constitute a major Federal action requiring a full EIS. The process of utilizing piece-meal assessments during incremental oil and gas development does not adequately address the true situation. F

The discussion of "Effects on Minerals and Oil and Gas" (pp. IV-11 and 12) mentions that "oil and gas development will be able to proceed but delays may occur in specific areas." Information on the nature of delays and specific areas affected should be included. G

It appears that substantial acreages of the Forest are subject to either no surface occupancy (NSO) or seasonal stipulations which could effectively preclude development. The final EIS should quantify the total acreage under (a) NSO and (b) seasonal stipulations, and fully analyze the cumulative effects of endangered species and other stipulations (e.g., soils, slopes, riparian, etc.) on the exploration for and developemnt of minerals, oil, and gas. F

TRIBAL RELATIONS

The Flathead National Forest lies in close proximity to the Blackfeet Indian Reservation. The Blackfeet Tribe, by treaty rights, has retained many privileges on the Flathead National Forest. These privileges include hunting, fishing, wood gathering, etc. The effects of timber harvesting, grazing, mining, and other management activities may serve to affect the quantity and quality of the water resource, affect income and employment, and provide other adverse and beneficial direct and indirect impacts. In this regard, the U.S. Forest Service must actively consult with the Blackfeet Tribe in reference to any surface or subsurface management actions that may affect the rights and welfare of the land or its members. H

Sincerely,

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

RESPONSE TO U.S. OFFICE OF ENVIRONMENTAL PROJECT REVIEW (Continued)

F. It is impractical at this time to prepare an EIS covering all the possibilities of oil and gas development activities. Each lease specifies areas of No Surface Occupancy and the leases are accepted under those conditions. Assessments during incremental oil and gas development are based on an up-to-date and consistent level of information and data.

G. The discussion refers to delays that may occur where coordination in the scheduling of activities in adjacent areas is necessary.

H. Chapter II-19 of the Forest Plan provides for a Forest Standard to coordinate concerns with the two Indian Tribes that are influenced by the Flathead National Forest. During the planning process, we have met with the Tribes about the Forest Plan and related issues.

No Postmark

W-054

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
1860 LINCOLN STREET
DENVER, COLORADO 80295-0699

AUG 10 1983
Ref: 8MO

RECEIVED
AUG 15 1983
FLATHEAD N.F.

Mr. John Emerson
Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, Montana 59901

Dear Mr. Emerson:

We have completed our review of your agency's draft environmental impact statement on the Flathead National Forest Land Management Plan. We appreciate the complexity of the issues with which you must deal and find the EIS generally deals with them in a straightforward manner. Although the issues are many, our comments will be directed at our concerns for protection of water quality in the Flathead area.

After completing some five years of participation in the Flathead Basin Environmental Impact Study, we recognize the importantance of the Flathead National Forest in protection of the water quality of area streams and of Flathead Lake. The role of Forest Service activities in controlling sediment and associated phosphorous loads to Flathead Lake is critical and must be a part of your management considerations. A

Although we support a departure from the present management plan and believe the proposed new plan would be an improvement in terms of water quality protection, we are concerned with statements such as: "over time, all alternatives have the potential to cause increased adverse impacts on water quality due to the increasing volumes of timber and the greater number of roads being built and maintained in each decade" (p. 111-44). Apparently water quality values, although no quantification is attempted, will be lost to some extent to timber harvest. B

As stated in the EIS, road building is the main threat to water quality from timber harvest. However, the figures on Table 111-6 (p. 111-55) do not show major differences in total road mileage between the various alternatives considered. Perhaps an alternative with a significantly reduced amount of proposed new roads would not have the previously mentioned "potential to cause increased adverse impacts on water quality." We believe an alternative should be considered which meets this criteria. C

According to EPA's rating system for draft impact statements, this EIS is rated ER-2 (environmental reservations - insufficient information). This rating is based on our comments on water quality considerations. If you have any questions, please contact Mr. Gene Taylor in our Montana Office, Helena, at (406) 449-5486.

Sincerely yours,

for
John G. Welles
Regional Administrator

RESPONSE

A. Best Management Practices have been included in the Forest Plan which set standards for conducting management activities so as to protect and maintain water quality and fish habitat (see Chapter II of the Forest Plan under Forest-wide Standards for Water).

Water flow, sediment yield (suspended and bed load), and streambed sediment levels will be measured to determine the effects of Forest management activities on water quality and spawning gravels. Extensive chemical sampling will not be done unless additional money is available.

B. The reference in the Draft EIS on page III-14, regarding increases in adverse impacts on water quality due to increasing volumes of timber and greater number of roads, may be true. The increases, however, would be kept within State water quality standards by following Best Management Practices.

C. A "minimum level" "custodial" benchmark was developed. No new miles of road were projected. This benchmark demonstrated reduced impacts on water quality from Current Direction (see final EIS, Appendix B, Chapter IV). Even low levels of timber management, as projected in Alternatives 1 and 5, resulted in increased road miles.

Harvest of timber from only existing roads would result in a substantially lowered volume due to the need to protect other resources, such as wildlife, soil, and water quality. A substantial reduction in sale volume would create a significant social and economic impact on the Flathead Valley.

United States
Environmental Protection
Agency

Region 8, Montana Office
Federal Building
301 S. Park, Drawer 10096
Helena, Montana 59626

E-1046

EPA

MAR 11 1985

Ref: 8MO

RECEIVED
MAR [illegible] 1985
Flat. Nat'l. Fores

Mr. Edgar Brannon
Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, Montana 59901

Dear Mr. Brannon:

Under authority of Section 309 of the Clean Air Act we have completed our review of the supplement to your Agency's draft environmental impact statement (EIS) supporting the Flathead National Forest Plan. Our principal concerns are with potential water quality impacts.

The supplement to your proposed Forest Plan appears to be limited to addressing new levels of wilderness allocations and modified grizzly bear management policies. It does not provide meaningful new information regarding sediment production and water quality impacts. The draft EIS and proposed Forest Plan indicated that all alternatives have the potential to degrade water quality. Twenty seven drainages are identified as being "at risk" for water quality degradation.

Your planning and hydrological staff stated that identification of twenty seven drainages "at risk" was based upon sediment modeling efforts that are not precise. The modeling efforts were intended to allow comparisons of the water quality impacts of the various forest plan alternatives. We are very concerned that the models lack the necessary data base to properly use them. More water quality monitoring appears to be required to collect data to improve use of the models. Your staff also indicated that identification of the drainages "at risk" was intended to focus increased attention upon activities in these sensitive watersheds. A more detailed project level analysis and evaluation would apparently then be carried out in these watersheds to identify additional mitigation measures to prevent degradation of water quality.

A

RESPONSE

A. The modeling efforts reported in the Draft EIS were intended only for comparison of alternatives. The Forest is in the process of gathering detailed information for a validation of the sediment prediction model. This model estimates the impacts of management activities on water quality and fish habitat, which will be useful at the project level.

The suggestion for adopting the Northern Region's direction, and for dropping the ~~use~~ of invalidated sediment models, is applied to the EIS. The Forest Plan has been strengthened by detailing the Best Management Practices to be applied at the project level, which will prevent water quality degradation, and by requiring stream by stream project analysis.

All Forest projects will meet State water quality standards. Best Management Practices and special prescriptions as set forth in the Forest Plan will be followed. Management activities may cause short-term increases in sediment production, but these will be within the acceptable limits of the State water quality standards. Natural variations in water quality are typically much more severe than impacts caused by National Forest management.

We request that you include additional information in the final Forest Plan and EIS to clarify what additional project level analysis and evaluation will be conducted for activities proposed in sensitive or "at risk" watersheds. You should also explain that this analysis is designed to prevent excessive water quality degradation.

We also strongly urge that you incorporate the Forest Service Northern Region's Sediment Production and Water Quality Considerations Guidance for Forest Plans in the final Flathead Plan. Your Regional guidance provides a better approach for assessing the water quality impacts of forest activities. A

It is imperative to conduct water quality monitoring in association with forest activities. Such monitoring; 1) provides the necessary data to validate the sediment models for future forest planning efforts; and 2) provides feedback to be provided to Forest Service land managers regarding the impacts of forest activities upon water quality. Your draft Flathead National Forest Water and Fisheries Monitoring Plan (February 1985) is a significant initiative to focus increased resources upon monitoring. We encourage a strong commitment to water quality monitoring to insure that water quality is adequately protected. B

According to EPA's ranking system this EIS is rated EC-2 (environmental concerns - insufficient information). The EIS indicates water quality will be degraded and not all adverse impacts can be mitigated. Insufficient information is provided for an accurate assessment of the water quality impacts of the proposed plan. We believe incorporation of the Northern Region forest planning guidance for sediment production and water quality impact consideration should improve the plan.

If you have any questions, please contact Mr. Gene Taylor or Mr. Steve Potts of my staff in Helena at 449-5486 (FTS) 585-5486.

Sincerely yours,

John F. Wardell, Director
Montana Office

cc: Steve Pilcher, HQB
Ralph Driear, Governor's Forest Planning Task Force

RESPONSE TO U.S. ENVIRONMENTAL PROTECTION AGENCY (Continued)

B. Our water quality monitoring is designed to adequately provide management information on attainment or nonattainment of goals and water quality standards. It is coordinated with fish habitat monitoring. The Forest Plan has been developed in close cooperation and coordination with the Flathead Basin Commission Monitoring Plan. Monitoring for phosphorus will be done when and as needed. It is not our mission to do basic research.

If the limits listed in the Forest Plan are exceeded, the activity causing the impact will be altered or stopped. Also, if monitoring of a project cannot be accomplished, the project will be delayed until it can be monitored.

B. STATE AGENCIES

	Comments and Responses On Page
Flathead Basin Commission	VI-60
Montana Bureau of Mines and Geology	VI-61
Montana Department of Fish, Wildlife, and Parks (six letters)	VI-63
State of Montana (Office of the Governor) (two letters)	VI-98

GOVERNOR'S OFFICE
FLATHEAD BASIN COMMISSION

TED SCHWINDEN, GOVERNOR
STATE OF MONTANA
CAPITOL STATION
(406) 444-3111

F-1066

February 27, 1985

RECEIVED
MAR [illegible]
FLATHEAD N.F.

Mr. Ed Brannon, Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

RE: Comment on Proposed Forest Plan

Dear Mr. Brannon:

Enclosed is a copy of a report to the Flathead Basin Commission entitled "Monitoring Surface Water Quality in the Flathead Basin" (January 21, 1985). This report was prepared by Dr. Jack Stanford, Director of the University of Montana's Biological Station, in cooperation with 13 other participating organizations. Because of its extensive land ownership in the Flathead area, the Flathead National Forest is a significant contributor to the monitoring described in the Master Plan.

At its January 21, 1985 meeting, the Flathead Basin Commission passed a motion urging that the Flathead National Forest incorporate all of the water quality Monitoring sites in this Master Plan in the Forest Plan for the Flathead National Forest.

The Commission wants to thank the Flathead Forest for the countless hours that were spent by its planners and hydrologists in helping develop the Water Quality Monitoring Master Plan. Your commitment to preserving the water quality of the Flathead area is deeply appreciated.

Sincerely,

Elwin Bennington

ELWIN E. BENNINGTON
Acting Chairman

Enclosure

cc: Tom Coston
Flathead Basin Commission
Dr. Jack Stanford

RESPONSE

Current and projected funding for water quality monitoring will not permit the Flathead to incorporate all recommended water quality monitoring sites in our annual program of work. Our planned water quality monitoring program is coordinated with the Flathead Basin Commission to provide maximum benefits for our individual and joint goals. Additional monitoring funds are being requested. If more monitoring funds are received, we'll coordinate new monitoring stations with the Commission. We share the joint goal of maintaining a high level of water quality in the Flathead Basin.

The draft report for the Flathead Basin Commission, "Monitoring Surface Water Quality in the Flathead Basin" (not printed here because of its length and draft status) was considered in developing the final Forest Plan.

G-003

RECEIVED
JUN 3 - 1983
FLATHEAD N.F.

MONTANA BUREAU OF MINES AND GEOLOGY
MONTANA COLLEGE OF MINERAL SCIENCE AND TECHNOLOGY
BUTTE, MONTANA 59701
406/496-4166

June 1, 1983

Mr. John Anderson
Forest Supervisor
1935 Third Avenue East
P.O. Box 147
Kalispell, Montana 59901

Dear Mr. Anderson:

I received your notice of May 25 on response to the Flathead National Forest Plan, etc., and thank you for same.

The recent tour with the Wilderness Association (May 19 & 20) was an interesting and enjoyable experience. My thanks for your efforts, and especially to Warren Illi and the Forest Service lady who called the locked car patrol for me.

As a member of the Governor's Ad Hoc Committee on Forest Resources, I will support the recommendations of that committee. My field, however, is minerals and geology. Thus, any comments are limited to those areas.

I would compliment you and your staff for your excellent effort on the Plan and EIS.

It has been noted that there is little metallic mineral activity on the Forest. I would agree, but point out that many geologists feel the stratabound copper-silver deposits in the Belt rocks of western Montana are likely present in the Flathead Forest area. It is quite possible, that a commercial deposit may (someday) be found. This eventuality should be kept in mind.

Relative to oil and gas, it is generally believed that Flathead and Lake Counties provide the best potential west of the Continental Divide. Favorable structures have been delineated, but the actual presence of oil and gas and its produceability must be determined by drilling. Exploration is currently at low ebb and the cost is high. I would suggest that exploration drilling be considered on a case to case basis with restrictions on a practical basis. Such restrictions should likely be on the same basis as the rest of Region 1. It is true that oil and gas resources should be inventoried as are other resources. It is also true that, if exploration fails to find a favorable hydrocarbon environment, leases

THE BUREAU OF MINES AND GEOLOGY WAS ESTABLISHED BY LAW IN 1919 AS A DEPARTMENT OF MONTANA COLLEGE OF MINERAL SCIENCE AND TECHNOLOGY TO PROMOTE EFFICIENT DEVELOPMENT OF MONTANA'S MINERAL RESOURCES BY GATHERING AND PUBLISHING INFORMATION ON THE GEOLOGY, TOPOGRAPHY, AND MINERAL DEPOSITS OF THE

RESPONSE

The Flathead National Forest agrees with comments made by Mr. Groff and has developed the following Forest Resource Goal:

> **Facilitate exploration for, and the orderly and efficient development of, minerals and energy resources, recognizing the need for balanced multiple-use management.**

will be dropped and the area abandoned.

Good luck in your deliberations and management.

Sincerely,

S.L. "Sid" Groff
Senior Scientist

SLG/pm

M-008

MONTANA

DEPARTMENT OF

FISH, WILDLIFE AND PARKS

Region One
P.O. Box 67
Kalispell, MT 59901

April 25, 1983

RECEIVED
JUN 30 1983
FLATHEAD N.F.

Mr. John Emerson, Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

Re: Proposed Forest Plan

Dear Mr. Emerson,

Thank you for the opportunity to meet with you and your planning staff to discuss the Proposed Forest Plan. In response to your request, I am sending you my evaluation of the Proposed Plan and DEIS, specifically as those documents relate to white-tailed deer. These comments also will be included with those of other personnel from this Administrative Region and submitted to our staff in Helena for inclusion in Montana's response to the Proposed Plan.

I commend the Flathead Forest for selecting the white-tailed deer as a management indicator species. Also, the Forest Goals that relate to white-tailed deer - to maintain high levels of open communication with the public and other agencies, to maintain and improve habitat to support increased populations of big-game species, and to develop a responsive road management program - are commendable.

I appreciate that all of the presently occupied white-tailed deer winter range was allocated either to winter range or to another allocation in which winter range is a compatible land use. In conversation with Bob Hensler, I identified a few areas in which winter range was allocated to Timber with Roads. Bob assured me that this was not the intent of the allocation, but rather the result of a mechanical error and that these would be corrected. If, in fact, it is necessary to allocate winter range acres to Management Area 15, the identified areas are not the appropriate places to make that concession.

White-tailed deer in northwestern Montana, generally, and particularly on the Flathead Forest presently find optimum habitat in the mature forest. Thus, there is the potential for a serious conflict between deer and timber objectives. It may not be possible to simultaneously accomplish the goals of maintaining and improving habitat to support increased populations of white-tailed deer and providing a sustained yield of timber that is responsive to local industry's needs. If it is possible, the task will require innovative approaches to forest management and a broader information base. Presently, we do not know how to maintain and improve

RESPONSE

Mr. Mundinger's criticism of the Proposed Forest Plan is the result of basic and fundamental differences between his whitetailed deer management viewpoints and that of the Forest Service. His viewpoint is predicated on three basic assumptions:

1. That whitetailed deer find optimum habitat in the mature forest.

2. That winter range is not the primary limiting factor affecting deer populations.

3. That deer and even-aged timber management are not compatible.

The Forest disagrees with Mr. Mundinger on all three assumptions. The United States, Montana, and the Flathead National Forest have less mature forest land than ever before, yet whitetailed deer populations are at record highs in these areas. Official announcements from the Montana Department of Fish, Wildlife, and Parks in 1984, stated that deer populations were at record highs. For the 1985 hunting season, the State will issue an extra 250 whitetail deer tags and extend the normal 1 week anterless hunting season to 5 weeks as methods to increase the deer harvest in the most developed part of the whitetailed deer range on the Flathead National Forest. These techniques, aimed at increasing the deer harvest, are hardly indicative of a declining deer population. Whitetailed deer are a very adaptable animal that can survive and thrive in a wide range of habitats, including that of a managed Forest.

There are many factors that limit deer populations and all need to be considered in providing for deer management; but in the Flathead National Forest, where deep winter snows in mountains make most of the Forest untenable for winter use, the very limited winter ranges are the most important habitat component limiting deer numbers. In the summer, whitetailed deer are spread over several hundred thousand acres of National Forest System lands, while their winter range is limited to 20 to 30 thousand acres. The vast amount of space, forage, and other habitat components found in summer range is of no value if adequate cover and forage is not available on the limited winter ranges. We're not saying that spring, summer, and fall habitat components are not important, but the most limited habitat is winter range.

The adaptable whitetailed deer thrives on well managed forests in which even-aged management is practiced. Even-aged forestry opens the Forest canopy and allows the production of usable forage within reach of the deer. Whitetailed deer do especially well when there is a good interspersion of mature forests providing winter thermal white-tailed deer habitat in northwestern Montana with silviculture as the principle management tool. The Proposed Forest Plan and DEIS do not adequately address these issues.

Two erroneous assumptions were fundamental to the consideration of white-tailed deer in the documents. These are: 1) winter forage is the principle factor that limits populations of white-tailed deer on the Flathead National Forest, and 2) deer and even-age timber management are compatible land uses. Neither of these assumptions is consistent with current information. Numbers of white-tailed deer on the Flathead Forest are determined by a complex relationship between the animals and their year-long habitat. Recent timber harvests, which employed even-age systems primarily, created abrupt changes in deer habitat over an extensive area. Coincident with those abrupt changes, we have experienced reduced populations of white-tailed deer. Apparently, this resulted because timber harvest occurred in large units, relative to the size of individual deer home ranges, and the abrupt changes, that characterize even-age systems, altered habitat integrity and diversity, as perceived by deer. As habitat was altered, so was the complex relationship between the deer and that habitat. The result was a reduction in the land area that produces white-tailed deer.

If a Forest Goal is to maintain and improve habitat to support increased populations of white-tailed deer, the Proposed Forest Plan and DEIS should be ammended in the following manner:

1. Winter range prescriptions should be based on the assumption that, unless managed with extreme care, white-tailed deer winter range is a non-renewable resource, at least for the length of the planning horizon. Conversion of the winter range to a fully regulated forest with even-age systems may, in fact, represent in irreversible and irretrievable commitment.
2. Inclusion of white-tailed deer summer range recommendations in the Forest-wide Guidelines.
3. Designation of identified critical non-winter habitats as a white-tailed deer summer range allocation.
4. A liberal definition and delineation of riparian wildlife habitats, especially where such areas occur in association with identified white-tailed deer habitats.
5. Potential risks to white-tailed deer and deer habitat from even-age silviculture, and the associated trade-offs, should be clearly displayed in the DEIS.

The principle strength of the winter range prescription, as displayed in the Proposed Forest Plan, is the direction to develop a long-range activity schedule. The principle weakness is that the prescription does not provide adequate flexibility to maintain present populations of white-tailed deer during the next five decades. Strict application of those

cover, dense thickets of second growth forests providing hiding cover during hunting season, and recently cut-over forests providing forage areas. All three of these habitat components can be provided by even-aged timber management. Even-aged timber management can be adverse to whitetailedad deer if not properly done.

Overall, the Forest Plan prescribes management techniques that will allow the whitetailed deer to increase its population over the planning period.

guidelines in the mature forest, that presently is occupied by white-tailed deer, will result in a further reduction in the habitat potential for deer. That reduction will be compounded with each scheduled entry through at least the first five decades, and quite possibly longer. Further, it is unrealistic to expect that, by the tenth to fifteenth decade, the regulated forest will support white-tailed deer winter densities at levels comparable to those that presently occur in the mature forest. Therefore, I cannot see a consistency between the Forest Goal of maintaining and improving habitat to support increased populations of white-tailed deer and the winter range prescription.

Previously, I submitted to Bob Hensler an alternative winter range prescription. That prescription was based on the recognition that:

1. Activities during the previous three decades were incompatible with the habitat requirements of white-tailed deer.

2. We presently do not know how to maintain and improve white-tailed deer winter habitat in the regulated forest.

3. A conservative approach to the management of white-tailed deer winter range is indicated for at least the next five to ten decades.

Those guidelines are appropriate for the mature forest because they provide greater flexibility, opportunities for innovative forest management, and opportunities to manipulate the mature forest without reducing its habitat potential in the short-term.

The guidelines displayed in the Proposed Forest Plan are appropriate for management of the existing second growth. They also are applicable to certain stands of even-aged, mature lodgepole pine - specifically those in which it is desireable, in order accomplish winter range objectives, to convert lodgepole stands to mixed coniferous communities.

As I indicated earlier, numbers of white-tailed deer on the Flathead Forest are determined by a complex interrelationship between the animals and their year-long habitat. In that relationship summer habitat is as important as winter habitat. Therefore, if a goal is to maintain and improve habitat to support increased populations of white-tailed deer, it will be necessary to employ Forest-wide Guidelines throughout the year-long distribution of white-tailed deer. Those guidelines should emphasize:

1. Maintaining mature forest in riparian habitats.

2. Maintaining the integrity between riparian habitats and contiguous areas of mature forest uplands.

3. Maintaining an interspersion of units, 5 to 20 acres in size, in approximately equal proportions of mature forest, advanced regeneration sufficient to provide hiding cover, and open areas - those in which regeneration does not yet provide hiding cover.

4. Flexibility - the opportunity to implement innovative forestry to address white-tailed deer summer habitat on a case by case basis.

5. Long-term vegetation manipulation schedules.

During recent research, we have identified certain areas on the Flathead National Forest which presently are occupied by significant concentrations of white-tailed deer during summer. These areas, generally, are characterized by a high density of riparian habitats interspersed throughout extensive stands of mature forest. The locations of these important summer habitats include:

1. The southwest portion of the Swan Lake Ranger District, between Glacier Creek and the Forest boundary, those sections allocated as 15C in the Proposed Forest Plan.

2. The north-central portion of the Tally Lake Ranger District, bounded on the west by Johnson Peak, on the east by Highway 93, on the south by the Evers Creek Road, and on the north by the Good Creek Road.

3. The central portion of the Tally Lake Ranger District surrounding Star Meadows, including Logan Creek, Griffin Creek, and Shepard Creek (T30N, R24, 25W).

If a forest goal is to maintain and improve habitat to support increased populations of white-tailed deer, these areas should be allocated to white-tailed deer summer range. The management philosophy for this allocation should be similar to that which I stated above for winter range, i.e. recognition that 1) previous activities were incompatible with deer summer range requirements, 2) we do not know how to manage deer summer habitat in the regulated forest, and 3) therefore, a conservative approach during the next five to ten decades is indicated for known critical summer habitat. For these areas, the guidelines for Forest-wide application, that I proposed above, would be appropriate, with modification to include Leach's recommendations, and to give additional consideration to riparian habitats.

Timbered riparian habitat is an integral component of white-tailed deer habitat during all seasons. Appropriately, the Desired Future Condition for white-tailed deer winter habitat, as displayed in the planning documents, includes the statement that winter habitat in riparian areas will be provided by the riparian prescription. That language should be included in the Proposed Plan; likewise, similar language, appropriate to summer range should be included. Further, the riparian prescription, in both allocation 12 and 17, should include management direction concerning the delineation of the riparian zone. Delineated zones should be sufficiently defined that the prescription will, in fact, be adequate to provide deer habitat.

Riparian habitats in both of the riparian allocations are poorly displayed in the Proposed Forest Plan. Further, criteria for the delineation of riparian zones were not presented. These deficiencies could result in potential conflicts in important white-tailed deer habitats - for example, those areas in which I suggested that summer range allocations would be appropriate. In such places, small riparian areas occur throughout stands in which mature forest is the dominant aspect and, in many cases, the only displayed allocation is Timber with Roads. It is not clear the extent to which the riparian inclusions will influence the overall management direction in those stands. Appropriate management for white-tailed deer would dictate a liberal delineation of the riparian habitat - i.e. a buffer zone that extended into the associated upland - and provisions to maintain continuity between that buffer zone and additional mature forest.

As I stated earlier, it may not be possible to simultaneously accomplish the stated goals for white-tailed deer and timber. Certainly, during the next five decades management to maintain and improve habitat for white-tailed deer will require a reduction in the offered timber volume. The DEIS does indicate that constraints for winter range will affect the potential timber yield. That effect would be greater if additional considerations for white-tailed deer are incorporated into the Plan. However, the DEIS does not display the risk to white-tailed deer associated with accomplishing the objectives for timber volume.

Much of the influence of forest management on wildlife, including white-tailed deer, relates to the selection of silvicultural systems, the size and duration of openings, and the length of the rotation. These issues received scant attention in the DEIS and their relationships with wildlife were not discussed at all. These issues largely determine the trade-offs, especially the risks to white-tailed deer, and should be displayed to clarify those trade-offs.

In our meeting, Dale Bosworth posed three questions: 1) Is the range of alternatives sufficiently broad? 2) Is the balance among resource outputs appropriate? 3) Is the display of trade-offs among resources accurately displayed? In summary, I will attempt to answer those questions from the perspective of the Forest Goal of maintaining and improving habitat to support increased populations of white-tailed deer.

Realistically, the range of alternatives is adequate. However, it is apparent that under all alternatives, timber management will be the dominant land use in all allocations where the harvest of trees is permitted. The documents do not display the logic for that decision.

Personally, I would be satisfied with the balance among resource outputs, if those outputs actually would be accomplished. However, I also think that the balance of outputs, displayed in the preferred alternative, is optimistic. For that reason, I can only endorse alternative 5. It is the only alternative, of those considered, by which the Forest Goal for white-tailed deer can realistically be accomplished, and then only if the existing guidelines for white-tailed deer were modified to be consistent with the philosophy of that alternative.

Also, I am not convinced that the timber outputs, irrespective of the balance, are realistic over the planning horizon. The projected timber outputs are based on largely untested assumptions concerning forest response to intensive silvicultural practices. Moreover, there is no assurance that the Forest will have a budget sufficient to accomplish those treatments.

The Monitoring and Evaluation section of the Proposed Plan does not address the potential conflicts among resource outputs. The Proposed Plan establishes optimistic outputs, optimism, that given the potential for conflict between outputs of white-tailed deer and timber, may not be warrented. Monitoring and Evaluation should provide sufficient direction to respond to those conflicts, should they occur. If two goals are in conflict and, thus, outputs cannot be provided as displayed in the Proposed Plan, which goal will have precedence? What is the basis for that decision? I realize that this circumstance will require the formulation of a new plan. But, in the interim, the existing plan is the legal management direction, and the interim could involve an extended period. It is not possible to adequately evaluate the Proposed Forest Plan, with respect to balance and trade-offs, without knowing how Monitoring and Evaluation will be used to modify management direction during the interim.

Thank you for considering these suggestions.

Best regards,

John G. Mundinger
Research Biologist

JGM/cta

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C-009

OK
BH

MONTANA

DEPARTMENT OF

FISH, WILDLIFE AND PARKS

Region One
Box 67
Kalispell, MT 59901

May 4, 1983

RECEIVED

MAY 5 - 1983

FLATHEAD N.F.

Mr. John Emerson, Forest Supervisor
Flathead National Forest
Box 147
Kalispell, MT 59901

Dear John:

Enclosed is a copy of comments and concerns arising during the review of the Proposed Plan and DEIS for the Flathead Forest by Department personnel.

We felt that the documents were prepared in a manner that facilitated "easy" reading and understanding. The geographical unit concept provides an opportunity to look at specific land areas, to visualize inter-relationships of allocations, and evaluate proposed activities.

There are some instances where we feel that Forest Guidelines and Management Direction could be improved. Some allocations seem to pose potential conflicts in specific areas. We like your approach to road management but fail to understand the continuing philosophy of providing the greatest possible level of public access to the Forest, which is an open-ended goal when all other uses of the Forest are being quantified.

We would like to work with you and your staff to resolve the concerns we perceive in the Proposed Plan and DEIS.

Respectfully,

James Cross
H. James Cross
Wildlife Biologist

HJC/mjw
Enclosure

RESPONSE

Response starts on second page.

STATE OF MONTANA
DEPARTMENT OF FISH, WILDLIFE AND PARKS

Office Memorandum

TO : James Flynn Attn: Glenn Erickson **DATE:** April 29, 1983

FROM : Tom Hay By: Jim Cross

SUBJECT: Review of Proposed Forest Plan and DEIS for Flathead National Forest

Several individuals in Region One have reviewed the proposed Forest Plan and DEIS for the Flathead National Forest. The consolidated comments are presented for your participation in the Governor's forest planning review committee.

Beginning in the Plan, we feel that a "Forest-wide monitoring and evaluation plan" must be based on well-defined units within the Forest that are sensitive to local modifications in the environment. Large analysis units tend to mask the detrimental activities within specific drainages and present a view of only minor changes to the monitoring item.

The Forest Objective for grizzly bear under Wildlife and Fish needs to be broadened. We do not share the opinion that preparation of habitat activity schedules only for the lands allocated to grizzly (MA 11, 11A, 11B, and 11C) will effect a recovered population. We do not agree with the philosophy that grizzly are forage dependent and that enhancement activities on grizzly allocated lands only are sufficient to maintain the existing population. Essential habitat components should be mapped in all density zones where mans activities can impact the bears (Density Zones 1, 3, and 4). While there may be some areas where increased grizzly bear numbers are not desirable, the absence of specific data on the amount and distribution of essential habitat components in presently occupied habitats would necessitate repeated small scale analysis and "may affect" situations for land management proposals with no ability to assess the overall impacts on a cumulative basis. A We also take exception to the expressed "optimum cover-forage ratio" B and the inference of incompatibility of grizzly bear and mule deer-elk habitat management where co-occupancy exists. Management direction for timber activities in grizzly bear allocations does not preclude silvicultural systems and logging methods that would destroy vegetation having high forage values for the bears. C

The Forest-wide Guidelines for elk summer habitat are inadequate in their present form. The moist site-habitat type criteria developed during the Montana Cooperative Elk-Logging Study iden- D

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

A. The Proposed Forest Plan prepared in 1983, did not display the grizzly bear management guidelines for the Flathead National Forest outside of specific grizzly bear management areas. The Proposed Forest Plan Supplement issued in 1984, and the Forest Plan display grizzly bear management guidelines for all occupied habitat. Grizzly bear habitat component mapping is underway and will be completed for all occupied habitat. Overall, this and other added management emphasis has resulted in receiving a nonjeopardy Biological Opinion from the U.S. Fish & Wildlife Service on the Forest Plan.

B. The optimum cover-forage ratio has been changed in the Forest Plan.

C. Management Areas 11, 11A, and 11B have no scheduled timber harvest. Timber harvest, if any, will be specifically designed to meet grizzly bear habitat component needs. Usually, this will mean producing more forage areas. Therefore, silvicultural systems used are those specifically designed in the long-term to maintain or enhance vegetation having high forage values.

D. Adequate protection for the "moist site" component of elk summer habitat is provided by Forest-wide standards for big game in the Forest Plan.

tified about 30,000 acres of habitat that fit the "key" elk
summer range concept, by no means all of the area being used
by elk as "key" summer habitat. Because of the inability to
allocate "key" summer elk habitat, the forest-wide guidelines D
must include language that facilitates the delineation and appro-
priate management direction for areas identified at the project
level as fitting the selection criteria or being used by elk
as "key" summer habitat. Size of units, silvicultural methods,
seasonal use considerations, open road densities, and integrity
of the feature need more direction in the Plan.

The Flathead Forest has taken the best approach to road management
noted in the review of Forest Plans. We still do not understand
the philosophy of providing the greatest possible level of publc E
access to the Forest, an open-ended goal at a time when all
other resources and uses are being quantified, when the present
amount and distribution of roads access about 80 percent of the
potentially roadable forest and facilitate over 90 percent of
travel on the Forest. Rather than arbitrary increases in miles
of open road across the Forest, analysis should be conducted F
by geographical units to determine where additional public
access is appropriate, desirable, or possible. It is time for
a more positive approach to providing the public with access
to the Forest than a recurring demonstration of adverse impacts
from an already over-roaded situation.

There are problems with the snag requirement guidelines for
many of the management areas. The timber management allocations
(15 and 16) comprise over 572,000 acres on which no positive
direction for snag management is provided. Mule deer-elk and G
whitetail winter ranges only provide for snags at 40 percent
of maximum potential. Management Areas 5 through 8, timber
production lands totalling almost 72,000 acres, provide for
only 40 percent of potential. It is likely that large areas
within the forest, in time, could provide snags at less than the
40 percent of maximum potential level. The absence of the riparian
wildlife and timber allocations on the preferred alternative map
makes assessment of the potential snag situation difficult.

MA-2b would allow semi-primitive motorized recreation at higher H
elevations along the Swan Mountain Range in areas that presently
support grizzly bear use. Key elk summer habitat also exists
in the area. This allocation poses serious conflict potential
and may be inappropriate. MA-2A considers development of primi- I
tive campsites and facilities in the Glacier Slough area which
has high value as summer whitetail habitat and could be a very
important habitat component in sustaining the Mission Mountain
grizzly bear population. MA-2 would allow extension of the J
Spotted Bear River Road to the Silvertip Cabin for administrative

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

E. We have not revised the long standing policy of providing the greatest possible level of public access to the Forest. What has changed is that we now consider the possible effects of increased access on other resources such as wildlife. The definition of access is also revised. No longer does access mean only motorized access. Walk-in access fully meets the definition and may be the preferred method of access over the long term.

F. Our transportation planning process is completed prior to building new roads. Even though a new road accesses only a small area, the total transportation plan for large geographic areas is developed. Transportation plans are developed by ID Teams. They consider all aspects of resource management, the need for "public" access, and effects of that access on other resources. The result is, we plan to close almost all new roads constructed and some existing roads. There is probably fewer open roads now than existed when the initial DEIS and Proposed Forest Plan were prepared in the early 1980's.

G. Positive snag management policy is now included for Management Areas 15 and 16. This, combined with snag management at the 40 percent level in other active management areas, will provide adequate, but not maximum, habitat for snag-dependent species. Also note, that 40 percent is the minimum snags required. Many areas, for a variety of reasons, will exceed the 40 percent minimum required.

H. Current and projected motorized use is very limited and does not adversely affect wildlife resources. The dense vegetation and steep terrain restricts motorized use to existing trails.

I. Whitetailed deer are adaptable and we do not believe public use of Glacier Slough, including primitive campsites, will affect the area's use as summer range. Since this is Management Situation 1, any conflicts between recreation use and grizzly bear will be resolved in favor of the grizzly bear.

J. The proposed road extension to Silvertip Ranch has been dropped.

Glenn Erickson
April 29, 1983
Page 3

purposes. A road would facilitate increased public access into an area that is grizzly bear habitat and an elk migration corridor. We do not see a real need to extend this road. J

In MA-9, white-tailed deer winter habitat, two concerns exist. First, mature timber stands that have high value as thermal cover are being harvested to provide forage while the development of second-growth stands to provide a comparable level of thermal cover value remains an unknown. It may be 30 to 40 years before the earliest harvest areas again provide an environment similar to that being programmed for harvest in the next few decades. We would urge a very conservative approach to the elimination of such a highly important habitat condition until there is a better understanding and realization of when second-growth forests can provide acceptable levels of the same condition. It is quite likely that whitetails, perhaps all ungulates, have developed a mechanism of survival during the winter period whereby cover as it relates to thermoregulation and energy conservation is more important than forage. K Ongoing research in movements, habitat selection, and habitat use by white-tailed deer in the Tally Lake area has identified some areas that have high summer range values, much as that habitat identified by earlier studies in the upper Swan. The Star Meadow - Logan Creek, Tally Lake - Round Meadow, and portions of adjacent geographic units are interspersed with riparian habitats that should receive consideration for allocation to either 15C or 12, depending upon the amount and distribution of riparian situations. We would recommend that this area be evaluated for possible reallocation to maintain the high values for summer whitetail habitat. L

Also, in MA-9 as well as MA-13, the issue of road management must be addressed. Management prescriptions, developed jointly by the Department and the Forest, called for restrictions to road use by motorized vehicles between December 1 and May 15. The ability to demonstrate adverse affects to wintering deer and elk populations related to motorized vehicle use, short of a carcass, is very difficult. The impacts could occur as reduced productiveness by the female segment and not be detectable for several years. We feel that the approach or philosophy to road management expressed in the Plan for MA-9 and MA-13 is very inconsiderate of the significance of winter habitat to the yearlong survival and welfare of deer and elk populations. M

In the Riparian Wildlife Allocation (MA-12), there is some question regarding the distribution of seral stages as presented on p. III-35 and the narrative description of the management intent. The distribution suggests much more activity than is portrayed in the narrative and more than seems appropriate for an old growth condition. MA-12 has no mention of the impacts grazing N

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

K. Management of the timber resource must be compatible with the whitetailed deer winter range goals, which include sufficient area and thermal cover. The long range activity schedule will assure these goals are met. The driving force in whitetailed deer winter range is deer habitat needs, not timber production.

L. The whitetailed deer is an adaptable animal that can adjust to the low level of activity anticipated during the summer months in those areas mentioned.

M. Road closures for the sake of road closures do not appear to be in the public interest. Roads should remain open unless we have a good reason to close them. The management direction for Management Areas 9 and 13 provide proper direction to do this.

N. This was a confusing table and has been dropped from the Forest Plan.

can have on riparian habitats. Many areas in the Island Unit exhibit some real problems from years of unregulated grazing. It would seem appropriate to have some direction in MA-12 to address the conflict should it arise. O

It would assist the readers if we knew what criteria will be used in delineating riparian habitat and what direction will exist for the management of riparian situations that are too small to be displayed on the geographic unit maps. P

There is no research to support a 30:70 cover-forage ratio on mule deer-elk winter range (MA-13). While the 30 percent thermal value may have been a constraint used but never realized in the FORPLAN modeling, it could be interpreted by managers as a goal. Environmental conditions occur nearly every winter in the January-February period when elk and mule deer utilize existing thermal cover quite intensively. It is highly probable that should thermal cover be reduced to 30 percent on winter ranges, elk and mule deer populations would be adversely affected. This is definitely a concern that identifies a research need before accepting as a goal for implementation. Q

The schedule of management activities for MA-9 and MA-13 (acres harvested in next decade) should be consistent with the completed long-range winter range activity schedules for both allocations and should recognize and take into consideration activities that have occurred in the past 25 years. The scheduling of relatively higher acres during the first decade than later decades would serve to meet timber outputs rather than wildlife needs. Long term trends in habitat enhancement may be more significant in ungulate ecology in this area than abrupt changes to the environment. R

The management direction for white-tailed deer summer range (MA-15C) needs much improvement. The only restriction is a 20-acre limitation on unit size. The riparian element and associated peripheral vegetation should have more protection and management direction than appears in the Plan. S

Under the timber direction (MA-15), the Plan directs that managers will find it necessary to exceed the size opening limit (40 acres) on a few timber harvest units annually. We interpret this direction to mean that diversity, as expressed through spatial distribution of seral stages and plant communities, will be sacrificed to achieve a timber output. We know that such practices reduce habitat effectiveness for big game species and preclude use of available forage in the interior of large openings. This philosophy hardly fits into the "integrated" T

O. The Forest Plan states that conflicts between riparian values and grazing must be resolved in favor of riparian values or the grazing allotment will be terminated.

P. The description for Management Areas 12 and 17 have been "beefed up" with more narrative and graphic information to permit identification of riparian areas too small to map.

Q. The Forest agrees that research is limited in establishing the desired relationship between cover and forage for management of winter habitats. Most winter range for elk is presently in excess of 70 percent forage on the Flathead National Forest. These areas likely do not represent the desired relationship. Cover properly distributed on these areas would improve their usefulness as winter habitat. Research from the Flathead National Forest, conducted cooperatively with the State, clearly indicates that during most winters, snow conditions prevail for short periods of time that require elk to seek cover for their existence.

To run the FORPLAN model and keep it from assuming that more forage is always better, a constraint of 30 percent winter thermal cover was established. Its correctness over time will have to be monitored and evaluated in the planning process.

R. The Forest agrees with this.

S. Ongoing whitetailed deer research was available in the Upper Swan River drainage that detailed the location and habitat needs of the whitetailed deer, the MA 15C (Timber) emphasis was adapted to include whitetailed deer summer habitat needs. The primary change between MA 15 and MA 15C was the change from 40-acre to 20-acre units. Research indicates that 20-acre units provide good summer habitat. Riparian areas were demonstrated to be a key component of whitetailed deer summer habitat. Although not mapped as a management area, these riparian areas and their importance to wildlife is recognized. The primary emphasis of riparian area management is wildlife habitat, particularly old growth, which is compatible with the needs of whitetailed deer. The full extent of how this key whitetailed deer summer range will be managed must consider riparian management direction due to the numerous riparian areas within the area. MA 15C will be managed to maintain and enhance whitetailed deer summer habitat.

T. The 40-acre guideline is the normal maximum size. While the Forest Plan allows methods for exceeding this upper size limit, the "average" clearcut will be around 25 acres in size, not 40 acres or more. The 40-acre size limit may be exceeded only if the criteria listed in the Northern Regional Guide (June 10, 1983) are met. The Forest is now encumbered with many stands of identical timber covering thousands of acres. This is the result of past forest fires. It will probably be two or three rotations (200 to 300 years) before the Forest has an ideal balance and distribution of timber types and age classes. Until then, we'll simply have to live with less than optimum wildlife populations.

concept of forest planning.

We are still not sure what criteria is being used to define different stages of seral development as it relates to the determination of cover:forage ratios on big game summer range in regulated forest. Will the dispersal of opening criteria in the Northern Region Plan apply? Two and one-half feet in height is less than hiding cover requirements and wildlife values could be jeopardized if this criteria is used throughout the MA-15 and MA-16 areas.

There is a real concern on how project-level activities will interpret and develop management direction for the timber areas (MA-15) that are adjacent to the winter range areas (MA-9 and MA-13). The use of winter range by ungulates in all years precludes the delineation of hard boundaries. It is very conceivable that a timber production emphasis in such transition zones could force ungulates to lower elevation sites just to utilize available cover. Forest-wide management direction should include provisions for making project-level decisions that maintain wildlife values in the transition zones.

In the Monitoring Plan, we propose addition of items C5.5 which
would involve measuring actual use on the ground by either U
browse use or pellet groups or both to verify use and trends
in use related to forage production and availability. In Item
C6, we are not sure what value will develop from measuring the
change in mapped critical elk summer habitat, when the mapped
habitat reflects only that part of the critical summer habitat
fitting the moist site-habitat type selection criteria. If the
management direction for key elk summer habitat is followed,
there should be no change in the total acreage from year to year V
or decade to decade. Should the Forest consider measuring W
important whitetail deer summer range? In Item C15, we feel that
the number of pelts may be influenced more by the price of fur,
number of trappers, length of season, etc. Number of pelts may X
not be a sensitive indicator for the tree dependent species
group.

Under 1E of the Evaluation Plan, a ± 10 percent acceptable
variability in both area and volume represents two different Y
targets. Which value will take precedence in the evaluation?

The DEIS and Plan acknowledge previous timber harvest has been
concentrated on the more accessible sites and slopes. If we
interpret the scheduling of management activities (acres harvested)
in the allocations with roads (MA-5, MA-7, MA-15) and without Z
roads (MA-6, MA-8, MA-16), nearly 10 percent of the combined
acreage with roads will be treated while less than three percent

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

U. Good suggestion. The Forest needs to know use as well as browse production. Winter range transects will be modified to include gathering forage use data.

V. Some of the Forest's key elk summer habitat is in management areas where elk habitat is an important resource, but not a primary resource; therefore, we need to monitor the effects of these other resource activities on key elk summer habitat. While elk summer habitat is not the primary use of the area, we need to ensure that changes are within acceptable levels.

W. The Forest feels that the whitetailed deer have a great deal of flexibility with regards to summer habitat and that, except for Management Area 15C, no other special summer habitat needs have to be monitored on a detailed basis.

X. We agree, but don't know of any other cost-effective way to gather possible population trend data.

Y. Both carry equal weight in evaluation. Area is important because that has long-term implications. We must meet area targets if the Forest is to be brought under regulated and intensive management and if we are to reach long-term timber production goals. Volume is important because the local timber industry and economy is based on the volume of lumber that can be sold.

Z. Timber management areas on steeper ground without road access cannot be managed as intensively as roaded land; therefore, it is inherent that unroaded areas will have less frequent treatments, especially with respect to intermediate cuts.

of the unroaded acreage will be treated in the first decade. This does not seem like a real positive approach to effecting a better distribution of timber harvest throughout the Forest and over all slope classes. 2

FISHERIES COMMENTS
FLATHEAD NATIONAL FOREST DEIS AND PROPOSED PLAN

Much of the fisheries portion of the Flathead National Forest Plan is based on the premise that 1) the stream fisheries are limited by the lack of suitable pool habitat, and 2) the negative impacts of road construction and timber harvest can be mitigated by habitat improvement measures. AA Neither premise has been substantiated by any work done on the forest to date.

The DEIS is very straight-forward in identifying potential impacts to the fisheries from Forest activities, but is weak in identifying specific mitigation measures that will be used, particularly in regards to riparian BB grazing and road construction. The methods used to predict fish numbers and sediment yields were not explained in the text, making it difficult for CC the average readers to evaluate whether the predicted outcome was accurate unless they contacted Forest Service personnel.

The basic methods used to predict fish populations were generally good but showed some problems. It was recognized that many forest lakes depend on adfluvial production or tributary spawning (DEIS, II-71), but fish populations in lakes with impacted tributaries were held stable through the analysis with the exception of Hungry Horse Reservoir. A larger problem is that a natural recovery factor was applied against the estimated population of trout in nonwilderness streams. This generalization would be valid only if all streams in the area were impacted and therefore below optimal levels. This is not presently the case and therefore the contributions from natural recovery were overestimated. By far, the largest problem is the estimation that habitat improvement will contribute 30,300 fish (DEIS, II-23) each decade. This would mean the proposed action would generate 43 trout per acre under the improvement schedule established in the DEIS (IV-14). This is far in excess of natural population levels. The concept of an acre of habitat improvement needs to be defined in terms of structure or methods, but the fact remains that project increases in sediments and water yields will probably negate the effectiveness of measures such as pool structures in a short period of time. All of the problems detailed overestimate potential trout production. While this would probably not change the ranking of alternatives, it could mean the difference between an DD increase or decrease from present populations into the future and this could change the public's perception of the acceptability of a plan.

The cost of habitat improvement is not detailed but it would appear to make good economic sense to curtail timber harvest and road construction to protect existing natural habitat. This is particularly true in light of the fact that the potential for habitat improvement is unproven and the EE Forest Service has been reluctant to fund such activities in the past. This is particularly significant because availability of clean spawning gravel is probably a critical factor in Forest streams. Road construction and timber harvest will directly impact spawning gravel through sediment inputs and these impacts will be difficult or impossible to mitigate through habitat improvement. FF

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

AA. Both premises are based on the professional judgment of Forest fisheries biologists and hydrologists. Many studies, while not done on this Forest, have substantiated the validity of both premises in similar environments. Those studies combined with professional on-the-ground experience on this Forest give validity to these basic fishery and water quality management premises.

BB. The Forest Plan includes a long list of BMP's (Best Management Practices) which are the best known measures to minimize and mitigate effects of road construction on water quality and fisheries. These BMP's have become Forest-wide management standards. The Forest Plan also includes a grazing standard which states, "control livestock grazing in riparian areas to maintain water quality and fisheries habitat." Any problem detected will be corrected.

CC. During meetings with biologists from the MDFWP, we have explained these methods to them. The Forest Plan involves such a broad range of analyses that not everything can be fully explained within the document itself. All detailed planning records are open to public review.

DD. The methods used to predict fish population numbers in the Draft Forest Plan were based on 20 years of data collected by the MDFWP's fisheries biologists. Estimated development was coordinated with these same biologists. Lakes in the managed portion of the Flathead National Forest are, for the most part, situated in the headwaters areas of drainages with the exception of a few such as Tally Lake, Ashley Lake, Little Bitterroot Lake, etc. In most high mountain lakes, fish populations are maintained by the MDFWP through fishing regulations and periodic fish stocking. Natural reproduction is inadequate due to extremely limited spawning sites. These fish populations are expected to fluctuate on the basis of angler use and stocking, but not because of natural reproduction. Fish populations in the larger, lower elevation lakes are not expected to decrease because of habitat improvement in spawning tributaries.

The recovery factor applied to estimating fish populations in nonwilderness streams is considered valid because recovery is a continuing process in practically all watersheds in view of past management activities.

The Draft Forest Plan stated that stream fish populations would be increased by 30,300 fish per decade as a result of direct habitat improvement. This means that fish numbers are distributed to 1,100 miles of stream for a total increase of 27 fish per mile per decade. Assuming 1 acre of water surface per stream mile means an increase of 27 fish per acre of stream in 10 years or 2.7 fish per acre of stream per year. Recent fish population studies and modeling by the MDFWP indicated stream fish population levels to be approximately 87 catchable size

With the goal of maintaining as much natural habitat as possible, the
project increases in water and sediment yields are of particular concern.
Sediment yields were calculated from general coefficients broadly related
to landtypes. The 27 landtypes in the forest were placed in four general FF
groups and then assigned a coefficient. In addition, sediment increases
were considered only from road construction and the effect of timber
removal was not considered. The predicted sediment yields are only general
in nature therefore and are probably inadequate for allocating land use in
the more critical forest drainages. The watershed management guidelines
would allow an increase in sediments of 50 percent over natural in streams
with fisheries based on a USDA sediment guide (DEIS, III-43). That same
draft, however, predicts an inversely proportional relationship between
sediments and all phases of juvenile trout recruitment. The guide suggests
that a 50 percent increase in sediments would cause at least a 50 percent
decrease in juvenile recruitment. The DEIS estimates that forest streams
support 53 percent of the Flathead River system's migratory fishery (DEIS, GG
III-19) (this may be a conservative estimate), and a 50 percent reduction
in portions of the fishery is not acceptable. In addition, the management
activities producing sediment such as road construction will be largely
completed before monitoring measures the actual output. Sediment yield
guidelines should be set at lower levels with minimal inputs allowed in
designated critical spawning streams.

Water yield guidelines (DEIS, III-43) are good except that streams closed to fishing are lumped with those open to fishing. This ignores the critical importance of the closed spawning streams to the maintenance of the entire Flathead River system fishery. Closed fisheries should be allowed only minimal increases in water yields. Furthermore, while the current direction would exceed water yields in 45 percent of the watersheds, the proposed plan would still cause water quality degradation in 38 percent or 42 of the nonwilderness forest watersheds (DEIS, II-89,90). The amount exceedance over standards is not specified in the DEIS or proposed plan nor is any reason given why standards can be ignored other than to harvest timber. Forest officials have explained that the variances are experimental in nature to determine the exact effect of excessive water yields. However, given this goal it would seem prudent to test exceedances on just a few watersheds rather than 42. Exceedance of water quality standards in a third of the nonwilderness watersheds will have a very detrimental impact on population numbers of the indicator species, westslope cutthroat and bull trout. HH

The DEIS proposes to coordinate forest activities with adjacent private landowners to meet water quality goals (II-88). This is an excellent goal. Private landowners will tend to maximize timber removal from their lands, however. The Forest should take a support position on intermingled lands such as the Swan Lake and Tally Lake Districts to allow for the activities in the private sector. It would be in the best public interest for the government to greatly reduce its cut on intermingled lands to assure that water quality is maintained. II

trout (6"+) per mile of stream in 138 reaches of streams in the North, Middle, and South Fork drainages of the Flathead River. The addition of 2.7 fish per mile of stream per year is not considered a gross overestimation in view of planned direct fish habitat improvements, coupled with BMP's and Forest Guidelines.

The primary purpose for the development of riparian area management prescriptions and guidelines was to provide protection to streams, lakes, and lake tributaries. These prescriptions are in effect now and managers are including their requirements in timber management activities to reduce potential impacts. This means that the effectiveness of direct habitat improvement projects will be enhanced and trout populations will increase.

Fisheries in wilderness areas will be managed by regulations and "people management". The minimum approach may have limited site specific use, but it is unlikely to be employed to a large extent.

EE. Habitat improvement techniques are well established by numerous studies and professional experience. Fishery habitat improvement projects that are used to mitigate impacts of timber harvest and associated roads, will be funded at the same time timber sale preparation and administration activities are funded. Both types of funding go hand in glove. Fishery habitat improvement can also be financed with timber sale receipts (K-V funds).

FF. Many studies have documented that almost all increase in sediment production is the result of road building, not the timber harvesting itself. Soil movement, if any, is so localized in timber cutting units that it seldom reaches a stream.

GG. The 50 percent and 100 percent upper limits for allowable increases in sediment yields have been greatly misunderstood. The increases projected are increases in "man-caused" sediment yields which normally are only a very small part of total sediment yields. Actually, it is very difficult to accurately predict any increases in sediment yields due to man-caused disturbances. These models have not been validated, and the results were used only to compare alternatives and target risk areas. We did not include sediment yields in our Draft EIS as actual results because of the unknown accuracy of the models. The Forest Plan will drop all references to predicted or allowable increases in yield. Instead, the new management direction is to meet all State water quality standards, follows BMP's and develop a water quality monitoring plan that will detect changes in sediment yield. The Flathead National Forest is committed to maintaining and enhancing the fisheries resources.

HH. Man-caused water yield increases are exceedingly difficult to predict due to extreme natural variability. In the past, due to these water yield unknowns, we established guidelines that we now feel are grossly over restrictive. Our experience and limited monitoring program have shown no unacceptable affects where

The DEIS identifies soil and water as the primary factors in the long-term productivity of the forest (IV-61). It is difficult to comprehend therefore why the proposed action would allow sediment or water yields to exceed guidelines in more than a third of the managed watersheds, particularly when the proposed plan calls for increased timber production in the future. Impacted watersheds may require 40 years to recover (DEIS, IV-61) and repeated disturbances will prolong the recovery. JJ

The DEIS does recognize the excellent water quality and significant
fisheries resources on the Forest. Significant mitigation is called for
such as guaranteed fish passage, natural log recruitment (5-27), minimum
flows, and so on. Good road construction standards are listed on IV-59 KK
although erosion control measures should be used, not could be used on cut
and fill slopes. Riparian grazing is well addressed on IV-22 but
significant mitigation measures such as streambank fencing or reduction in LL
AUM's are never addressed.

Alternative 5 increases fish and wildlife numbers, maintains more natural habitat and riparian habitat, and maintains better water quality with only an eight percent decrease in maximum sustained timber yield and with concurrent decreases in management costs. Many of the management allocations under Alternative 5 deserve further study for inclusion into future Forest management. MM

PROPOSED FOREST PLAN

The direction, objectives, and research needs as outlined in the plan
are good. Research needs might also include the influence of land uses of NN
different Forest landtypes on sediment yields to streams. The Watershed
Management Guidelines (F-1) are acceptable except when applied to critical
spawning streams as discussed in the DEIS evaluation. Furthermore, 27
streams will exceed guidelines in the next ten years (II-15) and an
additional 15 streams will exceed standards in the next 50 years (DEIS, II-
90). Four of the 27 streams are identified as critical spawning habitat.
Big, Cottonwood, and Fish creeks are closed to fishing (F-3) with Big Creek
providing bull trout spawning in the North Fork drainage and Cottonwood and
Fish creeks providing spawning for rainbow-cutthroat hybrids from Ashley
Lake. Ashley provides a very significant fishery with a 30lb 4oz. world
record "cuttow" being landed in 1982. Spawning potential is very limited
in lake tributaries. In addition, Sullivan Creek supplies very important OO
spawning for westslope cutthroat out of Hungry Horse Reservoir (IV-49) and
upper Griffin Creek contains a pure strain of westslope cutthroat (IV-89)
so impacts on Trib 1 (Griffin) may impact that population. Westslope
cutthroat were recently reclassified 1-A by the Montana Department of Fish,
Wildlife and Parks. This designation is for a species with a genetic pool
with national significance but with limited numbers and distribution. We
feel that allowing excessive impact on all the above-mentioned tributaries
will result in significant decreases in the regional fishery resource. It
should also be noted that 74 percent of the streams impacted in the next 10
years will be on the Tally Lake District. This covers nearly every
watershed on the district. This level of impacts is simply not acceptable, PP
particularly when the cumulative impact of such degradation is not known.

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

these guidelines have been exceeded. Due to increased pressure to produce more public benefits on a fixed land base, however, we need to examine the validity of self-imposed restrictions. It is our feeling that exceeding past guidelines in 45 percent of our nonwilderness streams will not cause unacceptable impacts. An intensive water quality monitoring plan will be used to help verify the validity of these guidelines. Projects will be dropped if monitoring indicates any violation of State water quality guidelines.

II. The role of the National Forest System is not to be a mitigating area for irresponsible land management on adjoining private land. All landowners have a role in proper land management. We work closely with major landowners to minimize management conflicts. We need to recognize that private landowners have different land management goals than public landowners. While we do not support foregoing public benefits from public land due to irresponsible adjoining land management, we do in fact, modify our activities to account for the cumulative impacts of adjoining ownerships and management.

JJ. As stated earlier, the water yield guidelines are being exceeded only because we feel the past guidelines are unnecessarily restrictive. The Flathead National Forest is a managed Forest and any project or use by man can and probably will cause impacts on soil and water resources. Congress has directed the Forest Service to manage the forest for a variety of public benefits. This does not necessarily mean we maximize any one resource or use. The key to a balanced management program is to maximize the flow of priced and nonpriced benefits without unacceptable impacts on other resources and uses. The most basic premise of all National Forest management is to protect the basic soil and water resource. The Forest Plan does that.

KK. Appropriate erosion control measures will be used on all road construction.

LL. Both techniques suggested will be used if necessary and where appropriate when a problem is detected. We must remember that range is a valid use of National Forest System land.

MM. When the Draft EIS was distributed, there was a misprint in Table II-1 (page II-52) for fish numbers. This has since been corrected so that total numbers of fish for Alternative 5 are 567 for Decade 1 and 614 for Decade 5, compared with Alternative 8, the proposed alternative in the Draft EIS, which has 542 fish for Decade 1 and 388 fish for Decade 5.

NN. This research suggestion is inherent in Research Need C: Validate the effects of forest management activities on changes in water yield and sediment production as they affect bull trout reproduction in spawning and rearing streams.

The watershed guidelines to seek minimum flows, construction guidelines, and to develop coordinated management plans with other land managers are worthwhile goals.

The objectives set forth in the riparian (12, 12A) management area are good. The riparian zone will generally function as a buffer between the stream and managed land areas. Because most riparian areas are rather narrow in width, timber harvest will generally not be a compatible activity. Trees that are removed should be directional felled and taken out over snow. Intermittent drainages that carry water during run-off but are dry the rest of the year may not exhibit riparian charateristics, but are important contributors of sediments and need to be recognized and protected. QQ

Only 22 percent of the riparian area was allocated to timber management (17, 17A). These were areas considered to be of lesser value to wildlife (III-52). These areas still serve as buffer strips to maintain water quality, however. This is important since more than one-third of the managed watersheds on the forest are expected to exceed water quality guidelines. This is particularly important since the ten-year timber sale program schedules 210 acres of riparian timber harvest in the Tally Lake District and 70 acres in the Hungry Horse District. The other three district did not schedule riparian timber harvest. As discussed previously, every watershed in the Tally Lake District will exceed watershed guidelines in the next decade. Construction of Hungry Horse Dam isolated the upper South Fork of the Flathead River (Hungry Horse District) and created what is believed to be the last major stronghold of pure westslope cutthroat trout. Most of the tributaries to the reservoir are used for cutthroat spawning. To preserve water quality and cutthroat spawning, the areas classified as riparian timber (17) should be reclassified as riparian fish and wildlife habitat (12) and removed from the timber base.

If timber harvest is still scheduled in the management area the guidelines should be made much more stringent. Uneven-aged stands, 200 year rotation schedules, and cutting units of 2 acres or less should be required, not preferred. Timber stand improvement activities should not be permitted. All harvest should be selective, directional felling, and over-snow. The reasons for the exceptional guidelines for upper Griffin Creek are not identified but the creek contains a population of pure westslope cutthroat (IV-89) and the guidelines are not compatible with maintenance of the fishery. Riparian areas are already overgrazed in this drainage and cutting units should be mitigated by streambank fencing or reducing AUM's. RR

GEOGRAPHIC UNITS

Swan Lake Ranger District

Lower Swan Unit Major concerns in this unit are the North Fork of Lost Creek, Goat, and Squeezer Creeks. These are major bull trout spawning streams in the Swan drainage.

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

OO. The Watershed Management Guidelines have been dropped from the Forest Plan. Instead, the Forest Plan will use BMP's to safeguard water quality (see Chapter II of the Forest Plan under Standards for Water). In addition, a watershed cumulative effects analysis is required for all projects involving significant vegetation removal. This is to ensure the project will not increase water yield or sediment beyond acceptable limits. Acceptable limits will vary depending upon the beneficial uses of that water. Therefore, extra caution can be implemented for special streams such as Big, Cottonwood, Fish, Sullivan, and Upper Griffin Creeks.

PP. The impact on Tally Lake streams are somewhat beyond the control of the Forest Service. The mountain pine beetle is killing thousands of acres of timber stands. Most hydrologists feel there is probably little hydrological difference between a stand of standing dead trees and that same area with the trees removed. When you consider the environmental risks of a high intensity forest fire that will eventually consume the dead timber stand, then it seems prudent to remove the dead timber and assist watershed recovery by reestablishing a new stand.

QQ. We intend to use directional falling and over-the-snow removal in many riparian area timber sales. All water courses, including intermittent drainages, are recognized in implementing good watershed management.

RR. Management Area 17 streams are usually higher gradient, perennial streams, and important seasonal flow streams. They and their inherent riparian management zones are usually too narrow in width to manage as a separate unit. Due to their limited size, management must be closely coordinated with management of the adjoining area. Rotation is 200 years and regeneration units are usually 2 acres or less. Fish and riparian values will be safeguarded.

Upper Griffin Creek has large areas of lodgepole pine timber which is best managed in 10-acre units. It does not have a mixed conifer forest that can be managed as smaller units.

Noisy Face Unit Unstable soils in the Krause Creek drainage should preclude any logging activities (Noisy Face N. (87)). SS

Spotted Bear Ranger District

The district contains many important spawning tributaries for westslope cutthroat and bull trout migrating out of Hungry Horse Reservoir/South Fork Flathead River system. Sullivan Creek is identified as the single most important spawning tributary for the reservoir, yet extensive timber harvest is scheduled in the drainage and the watershed is expected to exceed water quality guidelines (II-15).

Tally Lake Ranger District

Olney-Marten Creek Unit The Stillwater River corridor between upper and lower Stillwater Lakes is designated as a float trail and should be upgraded from a 2C to a 2B designation. TT

Upper Good Creek Unit The Good Creek drainage is scheduled for 2,710 acres of clearcuts from 1983 to 1988. There appears to be a high potential for exceedance of water yield guidelines. Riparian overgrazing is already causing bank erosion problems in the drainage.

Sylvia Lake Unit Hand and Sheppard Creeks are identified as important westslope cutthroat spawning streams (IV-70) yet both are scheduled for large timber sales (49.5 mmbf total) in 1989 and 1990 and both streams are expected to exceed water quality guidelines (II-15). This huge amount of timber harvest in a few years is not consistent with good resource management or multiple use.

Upper Griffin Unit Upper Griffin Creek contains a pure strain of westslope cutthroat but will be allowed to exceed water quality guidelines. Herrig Creek is an important spawning tributary to Little Bitterroot Lake for large (up to 10 pounds) rainbow trout. This stream is closed to fishing. The Forest Service portions of the drainage are allocated for timber management. UU

Ashley Lake Unit Ashley Lake supports a unique strain of rainbow-cutthroat hybrid. The lake produced a world record fish in 1982 and is a very significant fishery for trophy trout. The fishery depends on natural reproduction and spawning tributaries are very limited so increased sediment yields should be avoided at all costs. Nevertheless, two of the tributaries are projected to exceed watershed guidelines (Fish and Cottonwood, II-15).

Hungry Horse Ranger District

Bear Creek-Challenge Cabin Unit Major tributaries to the Middle Fork of the Flathead River in this area support about one-third of all the adfluvial bull trout spawning in the Middle Fork drainage. Granite Creek has contained an average of 10 percent of all the bull trout spawning redds

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

SS. We recognize the unstable soils in the Krause Creek area. However, that does not preclude managing all of the Noisy Face geographic area. No erosion or mass failure problems have been associated with the existing roads.

TT. This area is now Management Area 2B.

UU. This concern is a repeat of what is viewed as excessive timber cutting and grazing and its impact on water quality. Response is similar to those already given in Responses GG, HH, JJ, and PP.

found in surveys of the Middle Fork drainage in the last few years. Challenge Creek supported the largest documented cutthroat spawning run in the Middle Fork drainage. Skyland Creek is an important rearing area for juvenile bull trout as well as being located upstream from bull trout spawning areas in Bear Creek. Analysis of substrate samples taken from cutthroat spawning redds shows that a high proportion of fine materials (less than 2 mm in diameter) already exist in Challenge Creek (30%) and Skyland Creek (40%). The area is characterized as very steep with unstable soils (IV-99).

More than 16 mmbf of timber was removed from the Challenge and Skyland drainages in the late 1960's, but harvest schedules for 1983 call for harvesting 8.3 mmbf of timber and constructing more than six miles of new road in these important spawning tributaries. Granite Creek is scheduled for an additional 2.8 mmbf of timber harvest and about two miles of new road construction. The proportion of fine sediments already significantly exceeds natural levels in these streams and the proposed activities will jeopardize the spawning potential of these important drainages. VV

Emery Creek Unit Emery, Hungry Horse and Tiger Creeks are important spawning tributaries for cutthroat migrating out of Hungry Horse Reservoir and all three drainages are scheduled for extensive timber harvest in the next six years. These streams are characterized as providing more significant spawning than the east side streams (IV-120).

East Side Unit This unit is noted as containing major cutthroat spawning streams, but most of the area is allocated to timber including some riparian timber units. Riverside and Felix Creeks are the most important tributaries and these are scheduled for harvest in 1984 and 1987. The riparian timber units should be reclassified riparian fish and wildlife units.

RR

West Side Unit This unit is noted as containing seven important cutthroat spawning streams to Hungry Horse Reservoir, but most of the areas along the reservoir are allocated to timber including riparian timber. Doris and Wounded Buck Creeks are two particularly important streams allocated to riparian timber. All riparian timber units should be allocated to riparian fish and wildlife management.

Glacier View District

Trail Creek Unit Trail and Whale Creeks are closed to fishing due to their importance as spawning tributaries. It is difficult to assess total impacts on the streams since many cut through several geographic units. Whale Creek cuts through three units and the total scheduled harvest in the drainage exceeds 21 mmbf. The importance and vulnerability of spawning tributaries cannot be stressed to much.

Whale-Coal Unit Calculations by Department biologists indicate that fine sediments in Coal Creek are already at least 80 percent over natural yet the drainage is scheduled for extensive harvest over the next five years (26 mmbf). The speed and extent of entry will probably exceed the ability

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

VV. The Forest Service does not believe these sales will adversely affect the spawning potential of these streams. There has been extensive timber harvesting and road building in the past, yet these streams continue to be used for spawning. Current sales will include a wide variety of mitigating measures to minimize effects on water quality and fisheries.

of a monitoring program to detect problems so overruns in water and sediment yields are entirely possible.

Big, Canyon-Teakettle and North Fork Valley Units Two of these units include spawning streams that are closed to fishing but are scheduled for timber harvest. In addition, the Canyon-Teakettle Unit has erosion problems at the mouth of Kimmerly Creek where logging is scheduled and the Canyon Creek road has annual slumping problems.

MONITORING AND EVALUATION

The items scheduled for monitoring will give a good picture of changes in fisheries and stream conditions, but the extent and rapidity of timber harvest and roading activities in the Tally Lake, Glacier View and Hungry Horse Districts will exceed the ability to detect damage before a serious overrun has occurred. We endorse the concept that no downward trend is acceptable for fish habitat or westslope cutthroat and bull trout populations (V-22). This does conflict with the guidelines that changes in riparian habitat item (5C, p. V-21) can allow a 10 percent decrease in fish numbers from a five-year average. We question the use of five-year averages to measure trends. This would allow successive and cumulative decreases in an item and should be used only when a total percentage change from baseline or natural levels is also considered. The guidelines for evaluation of water and sediment yields are good, particularly the use of State and Federal Water quality standards. WW

The strength and success of the Forest Plan will depend mainly on the development and funding of a strong monitoring and evaluation plan.

SUMMARY

The documents were fairly easy to read and presented the information in a logical manner although some portions may have been too general in nature. The consequences of most management activities were fairly presented and the overall tone was an attempt to balance competing uses.

Unfortunately, although valid attempts were made to predict fishery response and water and sediment yields, timber harvest goals would allow widespread degradation of water quality and fish habitat. Even full funding of monitoring and habitat improvement programs probably will not prevent a decrease from present trout numbers, a population already decreased by man's past activities.

Important changes needed are to make timber harvest goals more compatible with other resource uses, to tighten and abide by watershed management guidelines, allocate riparian timber areas to riparian fish and wildlife management, and to better protect critical spawning streams. One obvious means of improving coordination in the future would be to allow fish and wildlife biologists from the Department of Fish, Wildlife and Parks to participate as members of Interdisciplinary (ID) Teams for critical management units. XX

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

WW. Because of tremendous natural variation, it is difficult to measure the change in water quality which is man-caused; therefore, we have changed the Acceptable Variability and Trends to coincide with State water quality standards.

XX. The Forest has tightened watershed management guidelines and increased the acreage of riparian fish and wildlife management. We welcome members of the Department to participate as members of ID teams if they can function in a multiple-use role.

M- 008

Bob Hinslow
had original
cy
6/16/83

MONTANA

DEPARTMENT OF

FISH, WILDLIFE AND PARKS

Region One
Box 67
Kalispell, MT 59901

June 14, 1983

RECEIVED
JUN 1 6 1983
FLATHEAD N.F.

William Pederson, District Ranger
Swan lake Ranger District
Bigfork, MT 59911

Re: White-tailed deer winter range, long-range activity schedule

Attn: Tom Wittinger

Dear Tom:

I have made a cursory review of the white-tailed deer winter range in the upper Swan River Valley - between Goat Creek and Condon - based on recent aerial photography and my familiarity with the area. The following suggestions may be helpful, as you develop long-term activity schedules for that area.

The desired future condition - as expressed in the planning documents - indicates that 50% of the winter range should be in thermal cover status at all times, while the remainder shall be a variety of younger age-classes. Regeneration shall feature mixed species with Douglas fir dominant.

At the present time, less than half of the winter range is in thermal cover status, while the remainder is less than 25 years old. Further, several of the recently logged areas are poorly stocked, or if well stocked, then occupied principally by a single species, either lodgepole or ponderosa pine.

As such, there are abundant opportunities to manipulate vegetation to maintain and enhance winter range for white-tailed deer. However, there are very few opportunities during the next several decades to use scheduled timber harvests to accomplish that objective.

The single biggest obstacle to accomplishing the desired future condition is the presence of large areas that have been treated in a manner that deviated significantly from the proposed guidelines. In order to accomplish the desired future condition, as soon as possible, it will be necessary to treat these areas.

RESPONSE

The suggestions offered by this research biologist will be useful in developing the long-range Whitetailed Deer Winter Range Activity Schedules. Since these Schedules will be developed in the future, we cannot respond specifically to these suggestions.

In fact, during the next 5 decades, the principle winter range management activity should be to manipulate the existing logged habitats to promote the development of second growth forests that are consistent with the desired future condition. This should include:

1. Eliminating the reforestation backlog.
2. Interplanting to achieve a better mix of coniferous species.
3. Clearcut/burn 10-acre units in existing second growth.
4. Scheduled timber harvests, prior to rotation age in second growth stands.

During the second 5-decade period, at least half of the acres scheduled for treatment should include second growth forest. This should occur without increasing the total acres treated, as defined by the guideline to treat one 10 acre unit per 100 acres every 12-15 years.

You already are aware that I cannot endorse the winter range guidelines, as displayed in the proposed Forest Plans, because those guidelines are incompatible with site specific information in the Swan Valley. Disregarding that discussion, there yet are many places on the winter range where the proposed guidelines are inappropriate. This is especially so in areas with inclusions of riparian habitat or in areas with variable terrain. Such areas should be identified and appropriate guidelines displayed in the long-term plan. Attached is a brief summary of each section.

I am looking forward to working further with you to develop the winter range plans.

Sincerely,

John G. Mundinger
Research Biologist

JGM/mjw
cc: Bob Hensler

S2 - T23N R17W: No entry during next 3 decades, possible entry thereafter, consistent with riparian/wildlife guidelines.

S17 - T23N R17W: Majority of M.A. 9 already logged in a manner inconsistent with winter range prescription. Large clearcuts in M.A. 5 and 12, also inconsistent with the appropriate prescription. Existing clearcuts should be regenerated to thermal cover before any further entries planned.

S19 - T23N R17W: No entry at least 5 decades. M.A. 9 in this section has already been logged. Previous entries in M.A. 12 were inconsistent with the riparian wildlife prescriptions. The M.A. 2 is a clearcut, perhaps that allocation should be changed to M.A. 9.

S2 - T22N R17W: No entry for next 2 decades. East half of M.A. 9 has been logged. Contiguous with M.A. 13 which also has been logged. Future entries should be designed to merge existing thermal cover with existing logged areas into logical habitat units.

S4 - T22N R17W: This section should receive special attention for regeneration. The only harvests during the next 150 years should be scheduled to harvest small areas of second growth - prior to rotation age - in order to develop a mosaic of age-classes in second-growth forest.

S6 - T22N R17W: There is opportunity for harvest this decade, following completion of the long-term schedules. Guidelines should be modified to consider the riparian inclusions. I do not understand the M.A. 13 allocation in this section. Was this an error?

S12 - T22N R18W: There is opportunity for harvest this decade following completion of the long-term schedule. Guidelines should be modified to consider riparian inclusions. The objective of regenerating mixed-species second growth should be emphasized.

S8 - T22N R17W: M.A. 9 in this section has already been logged. Majority of the existing thermal cover occurs in association with Lion Creek and the allocation should be changed from M.A. 5 to M.A. 12. Scheduled activities within the next 5 decades should feature harvests within the two large clearcuts.

S10 - T22N R17W: There is ample volume in this section to justify timber harvest, however the presence of three large clearcuts precludes any opportunity, for at least 3 decades, to schedule units that would maintain or improve habitat. The large clearcut in the SE¼ requires immediate reforestation to a mixed species stand. The next entry should be scheduled for approximately 2010 and should include at least one 10-acre clearcut in each of the existing clearcuts in the north half of the section.

S14 - T22N R17W: As in Section 10, there are no opportunities to maintain and improve habitat by scheduled timber harvests for at least 3 decades. However, it would be desirable to schedule activities in the two larger clearcuts in order to establish the potential for a better distribution of habitat units in the future.

S16 - T22N R17W: There are no opportunities to maintain and improve habitat by scheduled timber harvests for at least 3 decades. Activities should be scheduled for the existing clearcuts.

S18 - T22N R17W: Scheduled harvests in this section should be deferred until existing clearcuts provide cover. Thereafter, the guidelines should be modified to consider the riparian inclusions. The next entry should include units in the existing clearcuts.

S20 - T22N R17W: Most of the M.A. 9 in this section already has been logged in a manner inconsistent with the guidelines. This section should be treated to promote, as soon as possible, a second growth forest that meets the desired future condition.

S22 - T22N R17W: Most of this section has been logged in a manner inconsistent with the guidelines. As such there are no opportunities to manage habitat with scheduled harvest for at least 3 decades. For any future entry into the existing mature forest, the guidelines should be modified to consider the riparian inclusions. Existing clearcuts should be treated as soon as possible, to develop the desired future condition.

S24 - T22N R17W: Schedule completed

S26 - T22N R17W: Harvests for this decade already have been sold. There are opportunities for the next decade. Those should include a major modification of the guidelines to accomodate the riparian habitat and activities in the two existing clearcuts.

S36 - T22N R17W: There are no opportunities to maintain and improve habitat with scheduled timber harvests for a very long time. However, activities should be scheduled immediately to manipulate the second growth in order to develop the desired future condition.

S6 - T21N R16W: There are no opportunities to maintain and improve habitat with scheduled timber harvests for several decades. The allocation in this section should be modified to include everything below the road as M.A. 9. Immediate attention should be given to regenerating the new units in a manner consistent with the guidelines. Also, the large clearcut should be manipulated to meet the desired future condition as soon as possible.

S2 - T21N R17W: There are no opportunities to maintain and improve habitat with scheduled timber harvests for several decades. Management in this section should feature modification of the guidelines to consider riparian habitat and manipulation of the large clearcuts to meet the desired future condition as soon as possible.

S12 - T21N R17W: There are no opportunities to maintain and improve habitat with scheduled timber harvests for several decades. The existing mature forests should be managed with the M.A. 12 prescription. The large clearcuts should be manipulated to meet the desired future consition as soon as possible.

S14 - T21N R17W: This small parcel should be allocated M.A. 12.

S22 - T21N R17W: Units have been recently sold in this section. The long-term schedule should be developed after that sale is complete. Those units should be regenerated consistent with the guidelines. Guidelines for future entries should be modified to consider the riparian inclusion and the rolling topography.

S8 - T21N R16W: This small parcel should be managed for continuous cover. The guidelines for the adjacent M.A. 13 should be modified to consider white-tailed deer.

S18 - T21N R16W: The long-term plan for this section should be developed after the Smith-Cooney sale is completed. Units should be regenerated consistent with the guidelines. The guidelines should be modified for the south half of the section to consider the riparian inclusions.

S20 - T21N R16W: The long-term plan for this section should be developed after the existing sale is complete. Guidelines should be modified to consider the riparian nature of this stand.

S30 - T21N R16W: The long-term plan for this section should be developed after the Condon Creek sale. Guidelines should be modified to consider riparian habitat. Manipulation of the existing clearcuts would be appropriate.

S32 - T21N R16W: We discussed this section in the field. Guidelines should be modified to consider riparian habitat.

C-009

OK
bw

RECEIVED
JUL 5 - 1983
FLATHEAD N.F.

MONTANA
DEPARTMENT OF
FISH, WILDLIFE AND PARKS
Region One
Box 67
Kalispell, MT 59901

June 30, 1983

Mr. John Emerson
Forest Supervisor
Flathead National Forest
Box 147
Kalispell, MT 59901

Attn: Bob Hensler

While reviewing the Proposed Plan and Draft Environmental Impact Statement for the Flathead National Forest, we indicated certain areas in the Tally Lake District have high summer range values for white-tailed deer. This finding is based on the monitoring of marked deer. We recommended further evaluation of these areas for reallocation to either timber with roads with special consideration for white-tails (15c) or riparian wildlife (12).

In early May of this year, a field trip was made to look at a representative area in the Evers Creek drainage. We discussed the use of riparian and adjacent upland habitats within the home range of one of the marked deer. At the same time, we talked about the abundance and interspersion of riparian situations in particular areas of the District and the obvious necessity to consider the habitat needs of white-tailed deer in future land management decisions.

Shawn Riley and I have utilized data obtained in the study of habitat selection and use by white-tailed deer in the Tally Lake are (in progress) to dilineate areas of the Tally Lake District that have high summer range values (see enclosed map). These areas represent riparian features and associated upland habitats that compromise the essential components of white-tailed deer summer home ranges.

We are anxious to have white-tailed deer summer habitat considerations be extended to this portion of the Forest as was done in the Proposed Plan for the upper Swan. The riparian wildlife and fish allocation may adequately protect the riparian portion of white-tail summer home ranges but poor or no coordination im maintaining essential habitat in the associated upland areas where timber production will be emphasized could seriously reduce the effectiveness of the summer range areas to support existing levels of use by white-tails.

RESPONSE

The Forest Service does not believe there is a need to develop a special management area for whitetailed deer summer range in this area. The very adaptable whitetailed deer has shown that it can thrive in a managed forest environment. The summer range areas identified on your enclosed map have extensive riparian areas that will be allowed to develop into or be maintained as old-growth forest with minimal manipulation by man. This, combined with extensive road closures for wildlife security and other wildlife considerations, will provide very adequate summer habitat for whitetailed deer. The Forest Plan includes more consideration of the needs of the whitetailed deer than current management direction under which whitetailed deer populations have increased.

If a change in allocation can not be effected in the Proposed Plan at this time, we would urgently request that the management direction and guidelines be amended to provide the necessary protection needed to maintain the high value of dilineated habitats for summer white-tailed deer use.

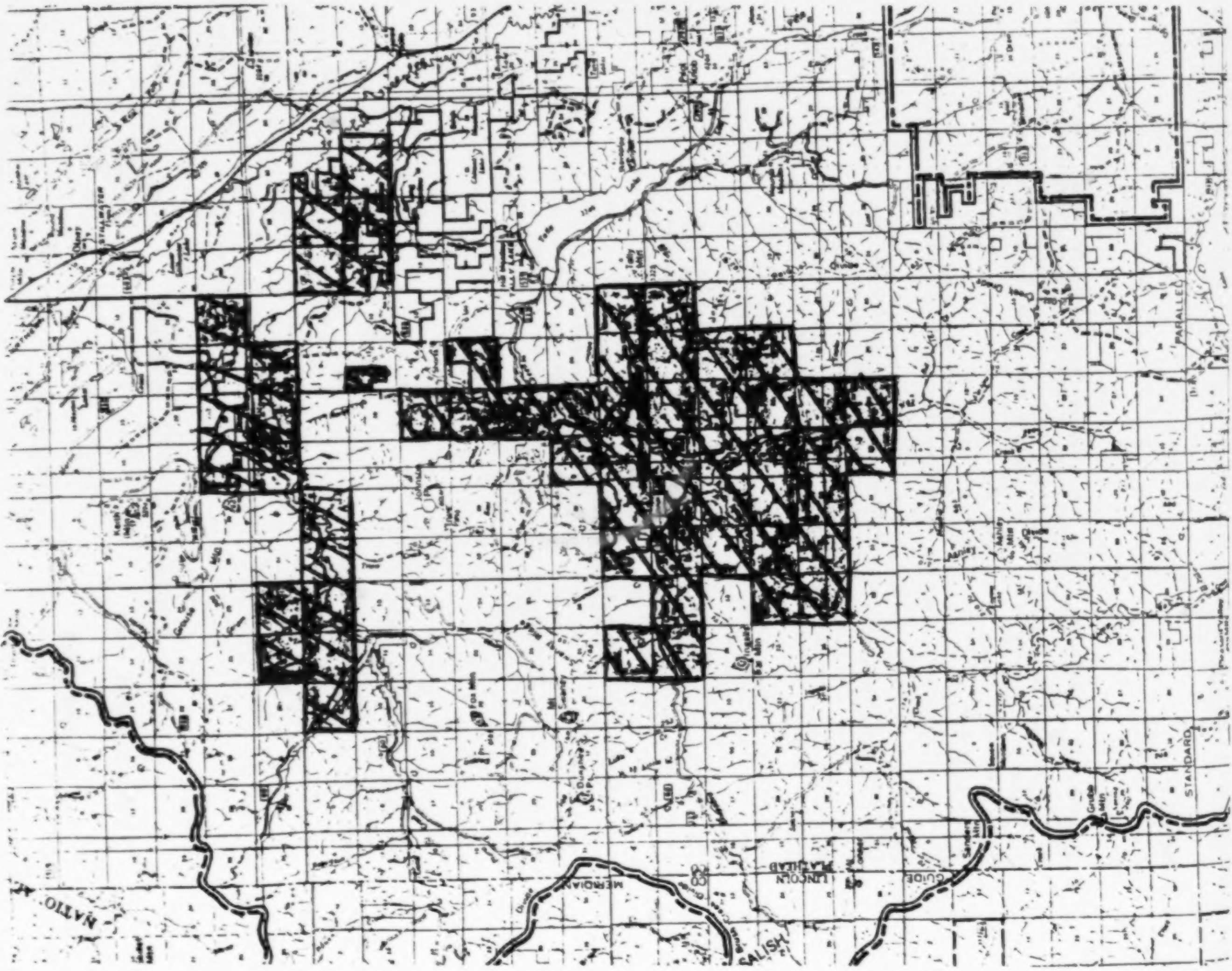
Respectfully,

James Cross

James Cross
Wildlife Biologist

JC:cg

Enc.


PARALLEL
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FLATHEAD N.F.

MONTANA
DEPARTMENT OF
FISH, WILDLIFE AND PARKS

Region One
Box 67
Kalispell, MT 59901
September 2, 1983

Mr. William Pederson
District Ranger
Swan Lake Ranger District
Bigfork, MT 59911

Attn: Tom Wittinger

Dear Tom:

Thank you for the opportunity to review the District's proposed activities at Lindbergh Lake, S24 T19N R17W. The following are comments pertinent to that activity.

A goal displayed in the Proposed Forest Plan, is to "maintain and, where appropriate, improve over time that habitat to support increased populations of big-game wildlife species". The activities that we discussed assume management direction from the 15C allocation. Because it emphasizes timber management in critical white-tailed deer summer habitat, that allocation contradicts the Forest Goal for white-tail deer. If management direction, as determined from allocations and prescriptions, has precedence over management direction, as determined from Forest Goals, I must conclude that the Flathead Forest in striving to accomplish goals that differ from those displayed in the Proposed Forest Plan.

Therefore, I recommend that the allocation and prescription for S24 (and other lands in 15C) be corrected in a manner such that the Forest Goal for white-tailed deer can realistically be accomplished. Alternatively, different Forest Goals should be displayed in the plan. If the second alternative is selected, the Forest should clearly display that it will be managing for reduced populations of white-tailed deer. Also, the Forest should assume accountability for that decision.

Of the various allocations displayed in the Proposed Forest Plan, the management direction of the riparian-timber allocation (17) provides the best opportunity to emphasize timber management while adequately considering white-tailed deer summer habitat in S24. I would strongly encourage that allocation for the entire section.

The desired future condition would be a continuous forest, occupied by several species-consistent with site potential, and all ages, from 0 to 250 years. In this condition, the continuous forest would be an interspersion of approximately equal areas of forested foraging, hiding cover,

RESPONSE

Most of the concerns expressed in this letter are similar to the concerns expressed in the Montana Department of Fish, Wildlife & Park's June 30, 1983 letter responded to by the Forest Service.

Section 24 provides an opportunity to integrate good timber management and good whitetailed deer management. The multiple-use emphasis for this section will remain as Management Area 15C.

The recommendation to close the proposed logging roads in Section 24 has been adopted.

and thermal cover habitat units. The size and configuration of habitat units should be determined by topographic features. Thermal cover units should occur in association with wet sites and draws. At least half of the margin of each wet site should be maintained in thermal cover status at all times.

Because lodgepole pine presently is dominant, it will be necessary to convert the section in order to achieve this desired condition. Conversion should be accomplished with small clear cuts in pure lodgepole stands or the selective removal of lodgepole where other species are present. Thereafter, management should feature appropriate site preparation and planting to achieve a desirable species composition. Harvests in second growth should feature commercial thinning and individual tree selection, consistent with an all-age and all-species objective.

Summer deer densities in S24 presently are at a realistic maximum. While it is possible to maintain that density for the next several decades, it is unrealistic as the long-term objective. Conversion will result in a reduction in deer numbers. Although this is an unavoidable consequence, it is desirable to mitigate for it because other areas in the Swan Valley presently have summer deer densities well below potential.

Therefore, I recommend that either a single entry to a maximum of 100 acres, or two entries, to a maximum of 128 acres total, be scheduled during the first two decades. Thereafter, treatments should be defered until reforesttation, consistent with the desired future condition, is well established in the first units and summer deer densities have increased elsewhere in the Swan Valley. Stands identified for treatment, should be selected because they offer the best opportunity to accomplish the desired future condition.

There will be problems associated with road development in S24. The additional access is not necessary to achieve a favorable distribution of hunters, there is limited opportunity for firewood gathering, and limited potential for picking berries. Therefore, I recommend that the entire road system be scheduled for permanent closure.

Habitat alteration, which will result from road construction, will not be compatable with the desired future condition and the road density will be excessive. Both of these situations will result because of topography. Therefore, I recommend that roads in S24 employ minimun clearing widths and be constructed to minimum standards.

Thank you for considering these recommendations.

Best regards,

John Mundinger

cc: Bob Hensler

JM/js

STATE OF MONTANA
DEPARTMENT OF FISH, WILDLIFE AND PARKS

M-1226 RECEIVED
FEB [illegible]
FLATHEAD N.F.

304

TO: Bob Martinka

FROM: Jim Cross and Jim Vashro

Date: January 25, 1985
Ref: JV 50

SUBJECT: Comments on Flathead National Forest Plan Supplement and DEIS

As requested, the Department of Fish, Wildlife and Parks has reviewed the DEIS Supplement prepared by the Flathead National Forest. The following draft comments are submitted in compliance with Executive Order 6-84 for your consideration in the preparation of a coordinated draft executive branch response. Subject to further agency review, these comments may be modified during the preparation of a final exeuctive branch response by the Governor's Planning Task Force.

The Draft EIS Supplement contains 8 alternatives that explore options for different land management emphases. Combined with the 8 alternatives presented in the earlier Draft EIS, the rational review and evaluation for one or more resource categories becomes a major undertaking. Each alternative is unique in its objectives, constraints, and outputs, such that the mix of management actions and land allocations soon tend to make one hope that the process of alternative formulation and output display is acceptable, consistent, and inclusive of all reasonable arrangements of management actions and allocations. With this taken for granted, someone not familiar with the forest planning process will hardly be able to address more than surface issues.

Alternatives 9 through 16 involve considerations for different levels of wilderness allocation. The new preferred alternative 11 appears to be the closest resemblance to the original preferred althernative 8 with wilderness additions of 48,854 acres, of which over 92 percent had been recommended for roadless dispersed recreation. Several issues developed and addressed in the earlier DEIS are unchanged in the Supplement DEIS. Our earlier comments on the Plan and DEIS, therefore, are still valid and appropriate to the issues and concerns addressed in those documents. A

Much of the fisheries portion of the DEIS supplement is still based on the premise that habitat improvement structures can compensate for declines in the fishery caused by activities such as road construction and timber harvest. This premise has never been substantiated by work on the Forest, nor is there a monitoring program detailed in the plan or EIS to evaluate the effectiveness of the program. The limiting factors for fish and the concurrent habitat improvement practices are not detailed so it is difficult to determine whether the fisheries goals can even be met. The limiting factor on many forest streams is probably the natural low productivity of the water (this is noted in the original plan) and in disturbed watersheds sediment is probably the primary limiting factor. Neither of these factorr are readily mitigated by standard habitat improvement structures yet the Forest plan proposes to mitigate fisheries degradation from resource development by constructing 3550 acres of habitat improvements over the next 50 years. It is unlikely that habitat improvement can substantially increase fisheries beyond the natural limits of the streams so most of the fisheries increases will be seen in degraded streams. As more watersheds

RESPONSE

A. Forest responses to previous comments are contained in responses to previous letters.

B are developed, it would seem likely that the overall trend of the fishery would be to decrease from current levels. As it is, the DEIS preferred alternative 11 predicts only an increase of 27,000 catchable trout (Table II-1) between decades 1 and 5. This is an average net gain of only 9.5 trout per acre of habitat improvement. Given the costs of habitat improvement work, it would seem to be more economical to constrain other resource development to prevent degradation of the fisheries in the first place.

C The DEIS shows a marked bias toward habitat manipulation. The DEIS does recognize that wilderness designations will protect existing fisheries (III-11, IV-4), but in the same passages points out that wilderness management also precludes habitat improvement. This is not a problem since it is unlikely that habitat improvement could improve upon the existing pristine fisheries (as is noted on p. IV-4). Furthermore, the bias for manipulation is very evident in the statement on page III-11 (DEIS) that, "If roadless areas were designated wilderness, stream fish habitat within those areas could change somewhat since direct habitat improvement would not be done." Wilderness designation would merely maintain the status quo while habitat manipulation would constitute a truly artificial change in the stream.

Fisheries evaluations of the alternatives may unfairly penalize those alternatives designating large wilderness acreage because the system measures only the trout in non-wilderness streams and the affects of habitat manipulation. Alternatives with large new wilderness areas, therefore, delete a number of wilderness fish from the base, lose credit for habitat improvement within the wilderness, and require increased investments in habitat improvement in the smaller number of non-wilderness streams to reach desired fish levels. The contribution of wilderness fisheries to the total forest fish potential was recognized in the original proposed plan (p. VI-12). This approach is more accurate since wilderness areas would be expected to maintain their fisheries at near optimum levels and therefore would contribute an important but differing portion of the total fishery as proposed wilderness acreage is varied between alternatives.

D Some projected changes in wildlife outputs defy logical understanding. Considering the proposed allocation of 2,900 acres of suitable timberland to wilderness, non of which are classed as big game winter range, why in Table II-1 does the output of deer and elk in the new preferred alternative decline in later decades over the old preferred alternative? While the deer and elk outputs are not inconsistant with the Department's goals for recreational opportunities in the next 2 decades, the outputs do reflect short-term economic considerations of timber harvest at the expense of long-term deer and elk outputs.

E Also, why does the projected total roads differ by only 5 miles with anticipated loss of nearly 3,000 acres of suitable timberlands? Figure II-13, if the graphics are correct, indicate the Forest will construct more roads than needed.

F Figure II-13A, for the preferred alternative, indicates more miles of unrestricted access in the summer months over the old preferred alternative and represents a road management approach inconsistent with current efforts between our two agencies. In Table II-6, total road costs are projected to be higher in the new preferred alternative than the old preferred alternative and, again, seem inconsistent with our understanding that the majority of new roads will be built for timber management activities and closed at other times and for other uses.

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

B. The true cost of habitat improvement cannot be measured without considering the economic and social values foregone if timber harvesting is eliminated in order to avoid mitigation costs. To eliminate all possible effects on the water and fishery resource would require halting all timber harvesting. Halting National Forest timber harvesting would "cost" the local economy 500 direct employment jobs and 1,000 indirect employment jobs each year. In addition, payments to the County would be reduced by one and one-half million dollars per year. The economic and social costs of not harvesting timber far out-weigh possible impacts on fishery resources; but the fishery resource is also important, therefore, these mitigating measures can be economically justified.

C. The Draft EIS reflects basic Forest Service policy that a managed and manipulated forest can provide more net public benefits than an unmanaged forest. Obviously, the wilderness resource is somewhat of an exception to this generalization. The Draft EIS attempted to indicate that a natural catastrophe in a wilderness, like a repeat of a 100- or 500-year flood similar to the 1964 flood, can destroy a productive fishery. In a nonwilderness setting, man can repair and enhance habitat and facilitate fishery recovery. In a wilderness setting, the option to "repair" a damaged fishery is foregone. The Department's comments wrongfully imply that a pristine stream means a productive fishery and conversely implies that a managed forest, landscape, or stream necessarily means a reduced fishery. The introduction of brook trout, rainbow trout, perch, bass, kokanee salmon, mack, and northern pike indicates that the public has fishery interests beyond a native fishery.

The approach used to estimate fish populations in the Draft EIS Supplement was similar to the original Draft EIS. We do not agree that wilderness always provides an optimum fishery. A wilderness fishery is a natural fishery. Whether that is "optimum" depends on the preference of each individual fisherman and the goals of the managing agencies.

Table VI-2 in the Forest Plan shows wilderness and nonwilderness trout populations of the Forest. The number of fish in most of the roadless areas is low due to the topography of most potential wilderness areas. Due to the low occurrence of the fishery resource in these areas, this was not a major factor for recommending/not recommending an area for wilderness.

D. The loss of 2,900 acres of suitable timberland and the addition of the grizzly bear guidelines required our computer model to re-sort timber sale priorities. This resulted in changing the harvest levels on mule deer and elk winter range. This affected production of new forage and the over-wintering capacity of those winter ranges through various decades. These changes are very minor and not necessarily explainable due to the broad statistical accuracy limits of the input data.

Narrative summary of the preferred alternative 11 (p. II-103) as pertaining
to management of potential winter ranges does not agree with the graphics
presented on page II-71 whereby 90 percent of elk and mule deer and 75 percent
of whitetail ranges will be managed rather than 75 percent for all as indicated.
Another concern is raised in the summary on page II-103. Timber harvests
in decades 1 and 2 "must come from the same drainages as past timber harvest." G
Recommended cover to forage ratios and distribution of age classes and units
are being compromised in the current timber sale program. Two more decades
of cutting in the same drainages will certainly create adversities in wildlife
habitat management throughout the suitable timber areas rather than just
on portions of them.

Table III-6, p. III-19, displays road construction and management targets.
As mentioned earlier, the preferred alternative would allow unrestricted F
access on 0.4 miles/section more than the old preferred alternative.

The Proposed Forest Plan supplement is the revised grizzly bear management
guidelines. A few comments are in order. If indeed management Situation
2 areas are those considered unnecessary for survival and recovery of the
grizzly bear (p.E-7), it is inconsistent to say on p. E-3 that some areas H
mapped as Situation 2 will be needed by bears as part of their total home
range. If the areas are needed, they should be Situation 1. The process
of mapping becomes suspect if one reads that Situation 2 areas are unnecessary
but will be needed. The Guidelines (V on p. E-4) could be improved. The
Forest's position on Situation 2 delineation in areas like the Swan Valley
where private lands occur weakens the total effort to maintain important
habitat for grizzly bear. Even though the Forest isn't able to exercise I
exclusive control over activities and programs that may effect the grizzly,
the delineation of these areas based on habitat capability rather than owner-
ship would establish direction for activities and programs on non-Forest
lands, would provide support for recommendations pertaining to activites
and programs on non-Federal lands, and would represent a more unified approach
to grizzly habitat maintenance and management. On p. E-6, 13a, the road
management objectives should allow for densities of less than 2 miles in
Situation 2 because many people (even agency people) accept standards and J
guides as objectives and will want to maintain 2 miles of open road in all
Situation 2 areas. On p.E-7, item 7 proposes a guideline of 20 percent
hiding cover and 20 percent thermal cover evenly distributed through the
sale or project area. The sale or project area is not an established geo-
graphical area and changes size and shape in each sale proposal. The cover K
requirements should be applied to some definable land area such as a geographi-
cal unit, management area, drainage, or timber stand. Actions proposed
to reduce grizzly mortality illegally occurring during big game hunting
seasons, p. E-9, could be reordered. I would propose that road closures
in key grizzly bear habitat would be a higher priority effort, more site- L
specific in application, and easier to implement than a black bear hunting
regulation modification. Also, Management Direction (VI-12, p. E-6) provides
for implementation of seasonal or year-round closures on existing or proposed
roads to reduce human/bear conflicts. At the present time, there is no
literature support for optimum grizzly bear habitat consisting of 40 percent
security cover and 60 percent open. No one has performed an analysis of M
occupied grizzly range to determine that such guidelines have validity or
are applicable throughout the grizzly range. Again, such suggestions become

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

E. **Five miles of new roads may be sufficient for 3,000 acres if the topography is steep and scheduled for long line skidding. Some of the 3,000 acres of suitable timber was MA 16, areas not planned for road access. Figure III-13A was probably drafted a little in error if it cites more roads than needed.**

F. **Your concern over roads - open miles during the summer, road costs, and road densities are understood by the Forest Service. The important road management data contained in the Forest Plan are the numerous Forest-wide and management area standards that require consideration of mule deer and elk summer habitat security needs, reducing road costs, and considering overall road densities in making management decisions. Even though we will continue to build more roads to complete our transportation system, open road mileages, during any season, will not likely exceed current levels. In fact, the District Rangers now report that current open road mileage is less than we had in 1980 at the beginning of the Forest planning process. Similarly, road standards and costs have been decreasing. This will have a positive effect on wildlife, especially to big-game security.**

G. **Page II-103 is correct in that it says "in over 75 percent ...." It would have been more accurate to say "over 90 percent" is managed as mule deer and elk winter range and 75 percent of the whitetailed deer winter range. The timber harvests will primarily come from MA 15's. While big game considerations are important, we are not trying to optimize cover and forage ratios. Some of the adverse effects of timber harvest and loss of security cover can be mitigated through road closures, which reduce hunting pressure.**

H. **The Forest is required to use the standard definition for MS (Management Situation) 2; therefore, since some of the Forest's MS 2 are needed for recovery these areas were placed into MS 1.**

I. **Much of the National Forest System land in the Swan Valley has been changed from MS 2 to MS 1 to provide more grizzly bear management emphasis in that area.**

J. **Specific reference to miles of open road densities has been dropped in favor of a standard that allows road closures on an "as needed" basis. Road densities may, therefore, be more or less than the former standards.**

K. **Good idea. The area is now defined as the "project analysis area."**

L. **The items listed to reduce grizzly mortality during big-game seasons were not listed in priority. They are all important and all will be implemented.**

guidelines that becomes goals. In the case where anti-grizzly people are claiming that the bears cost in timber and jobs, the opportunity for these guidelines to be taken for goals is enhanced.

Other Resource Issues - DEIS

N Riparian timber management costs are high and allocated at a cost to PNV in alternatives which increase timber harvest (DEIS III-11). Preferred alternative 11 allocates 22 percent (DEIS, Table III-4) of the riparian area to timber management. Given the high costs of management and the predicted problems with sediment and water yields, it would seem to be more realistic to allocate all of the riparian areas to riparian-wildlife where timber harvest is unscheduled, wildlife values are optimized, and the riparian zone buffering effect is maximized to mitigate other environmental degradation.

O The DEIS (S-18, IV-3) does note that increased wilderness designations would have a positive effect on soil and water by preserving high quality watersheds. We were also pleased that the DEIS (II-79) raised the issue of coordinating forest land management with adjacent private land management to protect water quality. However, the resultent discussion (DEIS, II-80) was confusing and only addressed the problems with the predictive methodology used. The issue raised was never addressed.

P Similarly, the DEIS (IV-23) gives a good discussion of the impacts of development of microhydroelectric projects within the wilderness. We appreciate the Forest's concern, however, the discussion does not touch on the impacts of microhydro development on non-wilderness and private lands. Microhydro was not covered in the original DEIS, and since many of the potential overall impacts are now well researched, it would have been appropriate to include a discussion of microhydro development in the DEIS supplement just as other resource development issues such as oil and gas were covered.
Q In general, the Forest Plan and DEIS disregarded the downstream impacts of forest management practices. Problems such as increased water and sediment yields continue to cause problems as they move downstream from forest boundaries and there needs to be at least an attempt to understand the total losses attributable to forest management to determine realistic cost/benefit ratios.

R Although the DEIS attempts to designate appropriate wilderness areas, it appears to discriminate against both the quantity and quality of wilderness recreation created. Although the DEIS recognizes that wilderness recreational visitor days (RVD) have a higher value (DEIS, II-97), it also shows a lower capacity. The DEIS (II-38, Table II-1) shows that designating current roadless areas to wilderness would cause a net loss of 33,000 RVD's. This is puzzling since wilderness designation is merely an administrative decision that maintains the present status quo. Unless the Forest intends to restrict use, the reason for the loss is not clear. Indeed, experience has shown that wilderness classification will many times increase visitor use. Equally puzzling is the statement (DEIS, IV-3) that there
S is significant off-road vehicle (ORV) use in the Swan Crest and that as wilderness designation displaces this use there could be significant soil and water impacts as ORV use is concentrated in new areas. The amount of ORV use needs to be documented, and if it is that significant, it is probably not compatible with the current roadless area management either. It would seem that other, less fragile, areas of the forest are more appropriate for ORV use and that this is a management, not a wilderness, problem.

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

M. The 40 percent cover/60 percent forage ratio is strictly a guideline, not a goal. This ratio is based on professional judgment, not any known study. Until better data comes along, it provides a general guideline when considering projects that manipulate cover/forage ratios.

N. The riparian timber areas are generally narrow riparian corridors between managed forest areas and highly susceptible to blow down. They really can't be managed as separate units like riparian wildlife areas. The riparian timber management emphasis is designed to recognize the silvicultural need to integrate the management of these areas with adjoining management activities while safeguarding riparian values.

O. The Forest is committed to coordinating management with adjoining landowners to ensure maintenance of high quality water. Some of this coordination can be through the Flathead Basin Commission. Coordination with corporate landowners and small private landowners is more difficult because they have different land management goals than public agencies.

P. Micro-hydro projects are basically a dead issue at this time. All FERC permits have been terminated or are inactive. Environmental effects, if any, from the remaining permits would be very site specific and better analyzed in a more localized environmental document.

Q. The final EIS/Forest Plan recognizes downstream impacts such as the affect on Flathead Lake. Increases in water yield and sedimentation from National Forest activities become more difficult to analyze downstream as the water is impacted by other land uses. Generally, water quality will be monitored by the Forest before it reaches the Flathead River.

R. In order to maintain the wilderness resource, maximum visitor use must be less than in roadless recreation areas. Thus, as more roadless recreation areas are converted to wilderness, maximum recreation or visitor capacity is reduced. Restrictions on maximum visitor use would, therefore, be placed on wilderness areas before restrictions on nonwilderness areas.

S. ORV use is documented in the planning records. This data is not as statistically valid as we'd like to have it. But it is the best data available. Motorized recreation use is compatible with the type of roadless recreation area planned for the north end of the Swan Mountains.

Economic analysis fails to adequately recognize the importance of recreation in ranking the alternatives. The analyses place great emphasis on net returns to the Treasury and recreational management shows no significant return to the Treasury (DEIS, II-13). In fact, the DEIS shows wilderness as an impact on the economy by eliminating timber harvest and mineral development and replacing it with lower-paying recreational service jobs (S-18). This is an obvious bias against wilderness and recreation and one that ignores the overall contribution to the local economy. Table II-1 (DEIS, p. II-55) shows the present value benefits of recreation for 11 PA as $330 million compared to $556 million for timber. Clearly, recreation makes a significant contribution to the local economy. Local economic stability is regarded as an important non-priced benefit in planning and is often used to justify deficit timber sales. Clearly, a more diverse economy is more stable. The addition of recreation service jobs adds to the diversity, and therefore, stability of the local economy. Since the Forest is willing to invest deficit dollars into timber and road management, it should not place a stigma on recreation because it does not show a net return to the Treasury.

T

Big-game management on the Forest also shows a marked bias towards roads and habitat manipulation as management tools. The DEIS (IV-10) states that "big game winter range habitat improvement in timbered areas, involve road building and timber harvest which results in roadless and wilderness values to be foregone." The DEIS (II-6) also states that some roadless areas could be roaded to accomplish grizzly habitat management. And again, the DEIS (II-82) states that roads are "a support item needed to implement the primary land management objectives such as timber and wildlife management." The DEIS (II-82) then goes on to state that the miles of road is a function of timber harvest and logging systems employed. And the DEIS goes further on page IV-11 to state that in areas unsuitable for timber management roads will not be built for habitat management activities. Wildlife management should direct, not justify, road building, and timber harvest.

U

I see the new preferred alternative as being less responsive to fish and wildlife outputs than the original preferred alternative. The wildlife concerns are not allocation oriented for the areas proposed for wilderness in the new preferred alternative have little bearing on big game outputs. The direction to harvest higher volumes in earlier decades is calculated to produce more deer and elk in the first few decades, dropping below original projections in later decades. The higher harvest will materialize from cutting more acres of land by regeneration methods while the total lands suitable for timber management are reduced. Higher road densities are indicated since total miles at full development are unchanged even though 2,900 acres are proposed for removal from the timber base. The majority of roads to be built are classed as local roads, designed to access the remaining timber resource, yet the total miles and density per square mile for unrestricted use by the public in summer months is higher in the new preferred alternative than the original.

V

The fish and wildlife communities in the Flathead Forest have evolved around natural biological events and succession patterns. The Forest should not regard artificial habitat manipulation as the only means to achieving desired population levels.

U

JC/JV/bj

RESPONSE TO MONTANA DEPARTMENT OF FISH, WILDLIFE, & PARKS (Continued)

T. Wilderness has difficulty competing with nonwilderness because wilderness eliminates priced benefits from timber harvest, while nonwilderness provides priced benefits from timber harvest and nonwilderness recreation. We support adding new recreation service jobs to the local economy, but can't economically justify these new jobs if they require a loss of higher paying timber jobs. Returns to the U.S. Treasury and to the local governments via the "25 Percent Fund" are important considerations in selecting a Preferred Alternative. Nonpriced benefits are also important considerations in decision making.

U. The Forest Service feels that a well-managed forest can generally produce more outputs than an unmanaged forest. Manipulating vegetation allows for diversity that isn't normally duplicated in nature. We believe that your focus is on past management which gave less consideration to wildlife and resulted in loss of wildlife populations. Management over the past few years has changed and will continue to change with more wildlife emphasis. The Tally Lake Ranger District, our most heavily roaded and harvested district has an increasing elk population, according to your own statistics. Meanwhile, the Bob Marshall Wilderness, with no roads and timber harvesting, has a declining elk herd. Management can be very beneficial to wildlife. Except in wilderness areas, the remainder of the Forest will be managed around a combination of natural and man-caused events. The result will be more public benefits.

V. The Forest Plan is highly responsive to wildlife. It will be more responsive than current management direction, the original Preferred Alternative 8, or the Proposed Forest Plan Supplement Preferred Alternative 11. But the Forest is not going to be managed just for wildlife. America, Montana, and the Flathead Valley need wildlife, but not _just_ wildlife. The Forest Plan will provide a mix of resources that will provide the greatest net public benefits, including priced and nonpriced benefits. The Flathead is not _just_ a wildlife management area. In response to public demand and Congressional direction, the Forest Service practices multiple use.

Postmarked 8/17/83

S-109

RECEIVED
AUG 1 8 1983
FLATHEAD N.F.

State of Montana
Office of the Governor
Helena, Montana 59620

TED SCHWINDEN
GOVERNOR

August 16, 1983

Mr. John Emerson, Supervisor
Flathead National Forest
1935 Third Avenue East
Box 147
Kalispell, MT 59901

Dear Mr. Emerson:

On behalf of the State of Montana and the Governor's Planning Task Force, I want to thank you for the opportunity provided for studying and submitting comments in regard to the Draft Flathead National Forest Management Plan.

The Draft Forest Plan was found to be well organized and complete. The DEIS and Plan were, by far, the easiest to read of those Plans reviewed to date. The information was presented in a logical manner and the consequences of most of the management activities were fairly presented. The overall tone was of an attempt to balance competing uses. With these same intentions, the State of Montana has attached its comments to the DEIS and Plan for your use.

I look forward to seeing the Final Plan once it is completed.

Sincerely,

TED SCHWINDEN
Governor

RESPONSE

Response starts on second page.

OVERALL AREAS OF CONCERN

1. Increases in sediment yield predicted in this and in other Forest Plans may be in violation of the Montana Water Quality Act, Sections 75-5-303 and 75-5-605 MCA, and the Montana Water Quality Standards, Section 16.20.633 ARM, Subsections 1 d-e and 2. Decisions on the acceptability of predicted increases in sediment yield can be made only on a stream-by-stream basis. Such decisions must take into account the stream's water quality classification, the relative value of the stream's fishery, the predicted loss of fish from the stream, and site-specific best management practices (BMP's) to be used in the stream's watershed. Information concerning the cumulative effects of forest activities on water quality and fish in individual forest streams should be made available for public inspection. Land, soil and water conservation practices that do not give adequate protection to water quality and valued fishery resources shall not be considered "reasonable" in the context of Section 75-5-306 MCA, Subsection 2, and Section 16.20.603 ARM, Subsection 11. A

2. The Flathead National Forest Watershed Management Guidelines should be used in conjunction with the State's Water Quality Standards to ensure that forest activities do not degrade water quality. B

3. Forest activities, through the multiple use concept, are planned to be harmonious with the environment. The Forest Plan should give forest managers the flexibility to deviate from the selected alternative in order to implement Best Management Practices for favorable resource management. C

4. According to the Forest Plan, projected harvest levels will exceed those of the current direction by the fifth decade. At the same time, the Preferred Alternative projects less roads; more fish, elk, white-tailed deer and grizzly bears; and more old growth forest than the current direction. It is not clear how more amenities, less sediment and less roads will be available concurrent with more timber harvest. This should be specifically addressed in the Final Plan. D

5. The 63% increase in year-round, motorized public access and 16% in hunting season motorized access projected by the Preferred Alternative will decrease the amount of security cover available to wildlife. The adverse effects of increased human-wildlife contact may not be offset by habitat management designed to produce a given ratio of open area to cover. Vigorous monitoring of wildlife impacts should be carried out along with access restrictions during critical periods and in critical areas. The maintenance of healthy wildlife populations is vital to the recreational economy of the area. E

6. Important changes are needed to make timber harvest goals more compatible with other resource uses as defined under specific concerns. Such changes could be used to tighten and abide by watershed management guidelines, allocate riparian timber areas to riparian fish and wildlife management, and to better protect critical spawning streams. One obvious means of improving coordination in the future would be to allow fish and wildlife biologists from the Department of Fish, Wildlife, and Parks to participate as members of Interdisciplinary Teams for management units. F

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

A. The impacts that are interpreted by the commenter are based on our disclosure in the Draft EIS of drainages which will exceed guidelines based on the theoretical calculations of water yield and sediment production.

As a result of our draft documents creating the interpretation of possible violation of the Montana Water Quality Act, the Flathead National Forest Planning Staff met with representatives of the State Water Quality Bureau and the U.S. Environmental Protection Agency on March 4, 1985. To achieve further understanding of the State's concerns, the final EIS and Forest Plan reflect changes based on the State's suggestions.

Reference to the theoretical sediment loads have been deleted from the Forest Plan. Attempting to predict sediment yields has focused attention on the lack of verified data and the complexity of sediment relationships in forest and aquatic ecosystems. The Flathead National Forest used sediment yield coeffiecients only as a systematic method of comparing alternatives. We did not publish quantified sediment yields as predicted effects. We agree that additional work must be done to better define these relationships, this is reflected in the research needs section of the Forest Plan. We have developed a Water Quality and Fisheries Habitat Monitoring Schedule which we believe will contribute to basic information needs and assure that sediment from Forest management activities does not exceed State water quality standards. This schedule is to be implemented in 1986.

Sediment yields were estimated in general terms because information about proposed timber sales and road location was only general. The impacts were not evaluated specifically because project level data is not available that allows specific evaluation. These relationships are required to be analyzed on a stream by stream basis in the Forest Plan. These project analysis are available to the public.

Forest Plan guidelines based on theoretical and locally unverified water and sediment yield coefficients are be replaced by Best Management Practices and monitoring requirements which are aimed at assuring that water quality is protected. The key element in this change is the requirement for modifying Flathead National Forest programs, projects, or contracts when monitoring detects unacceptable practices or environmental effects.

Monitoring plans have been strengthened to ensure no unacceptable degradation of spawning grounds occurs as a result of Forest management activities.

We do not foresee any unacceptable impacts or cumulative degradation as a result of the Flathead National Forest's programs. The Preferred Alternative projects lower timber

7. The "Forest-wide monitoring and evaluation plan" must be based on well-defined units within the Forest that are sensitive to local modifications in the environment. Large analysis units tend to mask the detrimental activities within specific drainages and present a view of only minor changes to the monitoring item. Monitoring should be directed at those areas where the anticipated impacts will be the greatest. G

8. A resource map should be provided with the Draft Environmental Impact Statement to enable reviewers to assess the appropriateness of the management area allocations. This land type map should be of the same scale as the management area map. In addition, an appendix describing physical characteristics and management limitations of the landtypes should be included. This, combined with the landtype map, would allow the reviewer to compare the capabilities of a specific area to the management prescription assigned to it. H

harvest levels and road construction rates for Decade 1 than in past decades. The types of road to be built are low-standard truck roads generally on midslope locations as compared to higher standard collectors and arterials with more locations in drainage bottoms which were built in past decades. The net effect of Forest Plan activities on water quality in the next 10 years will likely be an improvement compared to previous decades, and no unreasonable risk to water quality exists.

B. The Proposed Action of the Forest Plan includes BMP's (Best Management Practices) and references to the State water quality standards to ensure maintenance of water quality.

C. BMP's have been incorporated into the Forest Plan. The Preferred Alternative provides managers with sufficient latitude to ensure that Forest activities are harmonious with the environment.

D. This is discussed in detail in the final EIS, Volume 2, Appendix B.

E. Access restrictions will be imposed on many areas of the Forest to protect wildlife. Monitoring will be thorough enough to determine if Forest goals are being met.

F. Our fisheries and wildlife biologists work very closely with biologists from the Montana Department of Fish, Wildlife, & Parks and their personnel are invited to be members of the ID teams. As ID team members, they must be ready to operate in the multiple use mode rather than as functional specialists.

G. High impact areas will of course be the major emphasis for monitoring, but low impact areas must also be monitored to aid in process evaluation.

H. This is a good suggestion, however, costs can be prohibitive to include maps which anyone may feel might be needed. We suggested that anyone interested in this type of map contact our office to come in and view them.

SPECIFIC CONCERNS

A. Timber

1. Regarding the impacts of prescribed burning on the air resource and appropriate mitigation measures, reference should be made to the Montana Cooperative Smoke Management Plan. This plan is of major significance in Montana and is subscribed to by all major public forestry agencies and private companies. It forms the basis of the operational system which determines burning restrictions under the Department of Health and Environmental Science's Open Burning Rules. I

2. The Plan should address coordination with the Department of State Lands (DSL) on special resource fire protection constraints on Forest Service lands protected by the DSL. Affected geographic units include: the Island, Lower Swan, Train Creek, Whale-Coal, Big Creek and Canyon-Teakettle. Some of the management directions limit heavy equipment use and require consideration of the visual resource. What actions are expected of State firefighters in these circumstances? If "special" suppression tactics result in higher suppression costs, how will the State be reimbursed for the excess costs? These concerns should be addressed in the Final Plan. J

3. The timber allocation in Management Area 15 should not be extended to the heads of drainages as is the case in the Whitefish and Swan Ranges under the Preferred Alternative. According to the landtype guidelines, timber management is difficult in these areas because of potential soil compaction, rough topography, limited regeneration and low productivity, road maintenance difficulties, heavy blowdown losses and excessive ground water. Retaining these upper drainages in a natural condition will provide important summer grizzly bear and elk habitat which will help the Flathead Forest meet recovery goals for the grizzly. K

4. Water yield increases are predicted in the preferred alternative as in previous forest plans. The timing of this increased runoff should be carefully evaluated in the Draft Environmental Impact Statement. Clearcutting in some areas has caused increased early season runoff with subsequent below average runoff later in the summer. L

B. Grazing

The range resource has been given insufficient treatment in the Flathead Plan. We recognize that livestock grazing is not a major use on non-wilderness portions of the Flathead Forest. However, the potential exists to integrate grazing with forestry to a greater degree. Uncontrolled livestock grazing can have adverse effects on tree regeneration through browsing and trampling of seedlings, increased soil erosion and soil compaction. However, grazing may be used as a means of reducing competition between tree seedlings and herbacious species; controlling brush; exposing the mineral soil to enhance seedling germination; and reducing flammable fuels. Grazing has also been used to enhance forage quality and availability on big game winter/spring ranges. M

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

I. In the Forest Plan, under Forest-wide standards, reference is made to the State Implementation Plan, State Smoke Management Plan, and Federal Air Quality Standards.

J. State suppression activities on National Forest System lands should be in accordance with the Forest Plan. This coordination can be effected through the Flathead Northwest Land Office Annual Operating Plan and through use of resource advisors on fire overhead teams. Suppression costs are covered by whichever organization manages the land, regardless of the constraints.

K. The heads of drainages in the Swan Mountains have not been proposed for timber management.

L. The timing of the predicted increase in runoff was not evaluated in the Draft EIS or Proposed Forest Plan because the details needed to make such predictions are not available. Timing of water yields are considered at the project level of planning.

M. We feel grazing was handled in proportion to the interest and importance of this resource on the Forest. Grazing was not raised as a major issue during the scoping part of this process.

C. Water

1. Selection of Best Management Practices (BMP) for timber harvest, road construction, and maintenance should be fully supported by the Forest's hydrologist, soil scientist, fisheries biologist, engineers, and other forest management specialists. With approximately 1,100 miles of streams in non-wildeness areas susceptible to water quality impacts caused by timber harvest, implementation of correct BMP's is imperative to contain forest-related pollution problems. N

2. All alternatives describe water quality impacts due to sediment and water yield increases in watersheds where more road work (new or reconstruction) is planned. If specific impacts to water resources are anticipated in a watershed, mitigating measures addressing those problems would be helpful. O

3. The present net value (PNV) of the forest, measured in terms of appraised value of timber stands, and the aesthetic and water quality value of the Flathead Forest are two separate items. The quality of the scenery and water is a major reason for popularity of the region. The environmental value should be included as an asset to the PNV instead of a reduced value which restricts harvest methods, scheduling and road construction. Protection of visual quality, water quality and wildlife habitat would enhance the multiple use concept for forest activities. P

4. Oil and gas and mineral development may have effects on fisheries due to water quality changes. These changes in water quality should be addressed in terms of changes related to input of toxic substances, physical alterations of habitat, or other specific impacts to water quality. Q

5. The impact of roads through riparian zones and stream crossings should be assessed in terms of design capabilities. Stream crossings should be capable of passing migratory fish as well as withstanding a given discharge frequency (such as a 10-year runoff event). R

6. Coal development in the Howell Creek watershed in Canada is discussed in terms of impacts on fisheries. Water quality may also be affected and should be addressed. Recreational opportunities may be decreased by worsening water quality, however, the impacts should probably be addressed in a separate section of the Final Plan. S

7. An analysis of micro-hydropower development and the Flathead National Forest's position and role for evaluating these proposals would be helpful. An analysis of the water rights claimed by the Corps of Engineers, Bureau of Reclamation, Forest Service, and private entities should be discussed particularly in reference to the importance of Hungry Horse Reservoir and Flathead Lake to the Columbia hydropower system. T

8. As more areas are accessed for logging, other forest uses increase, i.e., firewood gathering, hunting, hiking areas, and use of recreational vehicles, etc. The impacts to water quality by erosion from increased access for logging, construction and consequential forest use should be addressed. U

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

N. BMP's are included in the Forest Plan.

O. The BMP's include mitigating measures.

P. There are assets which others have felt should also be included in the PNV, however, environmental values are usually not included. A dollar figure on environmental values would be difficult to obtain agreement on.

Q. The effects could occur, but until specific plans in specific areas are determined, the magnitude of effects cannot be estimated.

R. BMP's and riparian management objectives address these concerns.

S. The EIS evaluates water quality on beneficial uses. The most beneficial use in many streams is fisheries, which is directly related to recreation.

T. The evaluating procedure for microhydroelectric projects on the Forest is available for review in the SO and on the Swan Lake District. The other analyses requested by this comment are beyond the scope of the Forest Plan. None of the proposed management alternatives will specifically affect current water yields.

U. The standards to minimize impacts on water quality are discussed in detail in the BMP's. Firewood gathering, hunting, hiking, and use of recreational vehicles do not have many, if any, impacts on water quality.

E. Wildlife/Fisheries

1. Much of the Trail Creek Geographic Unit has been allocated to Management Area 11, Grizzly Bear Habitat, which employs scheduled timber harvest as a means to improve grizzly bear habitat. We support the emphasis of the grizzly management and recommend that this be changed to Management Area 11A (with unscheduled timber harvest).

More of the 11C allocation may be necessary to adequately provide a travel corridor for grizzlies in the Swan Valley. The purpose of this allocation is ". . .to maintain a secure grizzly bear travel route between the Mission and Swan Ranges." Security is the objective, however the scheduled timber harvest provided in this allocation for the purpose of optimum cover to forage ratios will create additional openings and reduce security. If security is indeed the primary objective, the 11A allocation seems more appropriate.

Flathead Forest officials have indicated tht the amount of timber in the area is insignificant in relation to the total proposed timber base. If this is indeed the case, the use of unscheduled timber harvest to enhance bear habitat would not adversely affect the timber industry but would give more flexibility in bear habitat management.

V

2. Management Areas 11 and 11C should be added to the list of utility corridors avoidance areas. The management objectives of these areas is the same as Management Area 11A which is an avoidance area.

W

3. In the Monitoring Plan, the State proposes adding item c5.5 which would involve measuring actual use on the ground by either browse use or pellet groups or both to verify use and trends in use related to forage production and availability. In Item C15, the State feels that the number of pelts may be influenced more by the price of fur, number of trappers, and length of season than by habitat condition. The distribution of harvest and catch per unit effort might be more sensitive indicators.

X

F. Soils/Erosion

1. Erosion problems, identified by cause and extent of damage, should be incorporated into the analysis.

Y

2. Best management practices intended to minimize impacts from oil and gas exploration should be included in the final Flathead Forest Plan.

Z

3. The high elevation portion of the northern Swan Range has been designated as Management Area 2B, semiprimitive motorized, this area is presently unroaded. The State does not object to over snow vehicles. Motorized vehicle use of this area has the potential to cause excessive erosion if not strictly controlled. We recommend a 2A allocation in this area to prevent erosion and protect important wildlife habitat.

A A

V. **The Forest Plan now specifies that there will be no scheduled timber harvest in Management Areas 11 or 11A.**

Since the Lolo National Forest has a grizzly bear management emphasis area which parallels our Management Area 11C area, we feel that the travel route between the Mission and Swan Ranges as presently designated is sufficient. The dense regrowth of vegetation after cutting provides good security cover.

W. **This was done for the Forest Plan.**

X. **Good suggestion. We need to know use as well as browse production. We'll modify range transects to include gathering forage data. We agree that pelts may not be the best indicator, but don't know of any other cost-effective way to gather population trend data.**

Y. **We feel that erosion problems caused by Forest activities, were adequately addressed in the Draft EIS. The minimization of sediment increase is a major Forest goal.**

Z. **These have been included in the Forest Plan.**

AA. **This area already receives considerable motorized recreation use. We have not seen any indication of unacceptable resource damage from motorized recreation use. Motorized recreation use is a legitimate use of National Forest System land.**

G. Recreation

1. A stated guideline for recreation should be to continue the existing Memorandum of Understanding between the Department of State Lands and USDA Forest Service regarding management of State lands within the North Fork Flathead River Wild and Scenic River Corridor. BB

2. Hunting opportunity as it is affected by open roads and timber harvest should be a part of the analysis. The Final Plan should incorporate this analysis. CC

H. Roading

1. Access roads to mining or drilling sites are of concern as previously discussed. Water quality problems associated with toxic spills, drilling muds, process water, produced water and reclamation should be addressed. A section listing the required mining water discharge and construction permits would be helpful. DD

2. Mitigating measures for water quality protection should be listed showing various ranges of application by site. As an example, certain hillsides with steep slopes, unstable soils and seeping springs may require special drainage structures, matting and road bed design. Certain BMP's are applicable forest-wide and some have limited application. However, some districts, more specifically, some watersheds are constantly susceptible to the same problems. Special mitigating measures (or BMP's) should be documented by district to minimize problems. EE

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

BB. This recommendation was incorporated into the Forest Plan.

CC. This analysis has been included in the final EIS, Chapter IV.

DD. We have not included such a section in the Forest Plan. These types of items would be handled at the project development level.

EE. BMP's have been included in the Forest Plan but they are not specific to Ranger Districts. The specific BMP's mentioned will be developed during project review.

GENERAL CONCERNS

A. Grazing

1. For those wilderness and non-wilderness allotments that face a possible reduction in AUM's due to big game or other considerations, the State recommends that before any such reduction occurs that the Flathead Forest conduct a thorough on-the-ground forage inventory with the knowledgeable assistance of the permittee. These permittees should be provided access to alternative grazing areas which do not cause hardships with respect to transportation of stock or more restricted season of use. FF

2. A 50% reduction in livestock forage on big-game winter ranges may not be reasonable in every case. Livestock could be used to stimulate browse production on some ranges. Preferrably, the amount of livestock use should be considered on a case-by-case basis. GG

B. Water

1. Forty-five percent of the 107 watersheds evaluated would have some degree of water quality degradation in the first decade. The type and extent of degradation, if identifed now, should have BMP's assigned to the problem to mitigate the situation. HH

2. Table II-7, Nonwilderness Watersheds and Acres of Timber Harvest Exceeding Sediment Load Limits - Flathead National Forest. The table is hard to understand -- possibly an example and explanation of what the columns mean would be helpful. II

3. Water quality and hydrologic data acquisition is always expensive and difficult to obtain even under ideal conditions. Maintaining a baseline water quality and streamflow gauging network is important for watershed management. Continuation of the existing monitoring program, with possible increases in the number of monitoring stations, would be helpful in determining long-term trends. JJ

4. Figure V-I Decision Flow Diagram for direction and implementation of the Forest Plan is helpful in reference to giving forest managers the flexibility to utilize different BMP's on the ground. By evaluating the planning and implementation procedures, the forest manager can determine if a proposed BMP will actually work on-ground. KK

C. Timber

1. The State is concerned with the fact that the timber harvest level in the first decade is lower than current direction. In addition, returns to the State, personal income, and employment are all projected to be considerably less than the current direction in the first three decades. Considering the previously depressed condition of the wood products industry in this area and the current LL

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

FF. No reduction of AUM's is anticipated due to our wilderness recommendation.

GG. Reductions or adjustments would be made on a case-by-case basis.

HH. BMP's would apply to all watersheds across the Forest.

II. This section has been changed in the Forest Plan; hopefully the confusion has been omitted.

JJ. The hydrologic monitoring on the Forest is coordinated within the Flathead Basin through the Flathead Basin Master Plan for monitoring surface water quality. The Forest Plan envisions expanding the quantity and quality of water quality monitoring.

KK. We would determine through monitoring if practices have worked or are working on the ground.

LL. The Forest Plan provides for an average annual harvest of 100 MMBF of scheduled timber sales plus an additional 5 MMBF of salvage; thus, in the first decade we will offer approximately 105 MMBF annually in new timber sales. In addition, the current level of timber volume under contract, but not cut, is at a record high of nearly 470 MMBF. Industry generally holds approximately 300 MMBF of timber uncut and under contract as a hedge against changing market conditions; therefore, there exists about 170 MMBF of excess volume under contract which can be cut at any time. This gives the timber industry as much as 122 MMBF annually for cutting during the first decade while leaving them with their normal 2 to 3 year supply of uncut volume under contract. Industries' average annual cut during the past decade has been only 101 MMBF. The flow of raw material from the Flathead National Forest is not responsible for the depressed timber economy over the past 5 years.

signs of recovery, every effort should be made to focus on those activities that will provide the needed stimuli to encourage and build upon that recovery during the first decade. LL

One possible compromise that would help to reduce costs, increase management efficiency, and increase timber production potential is to lower the visual quality objectives of the proposed alternative. By reducing visual quality constraints to critical viewing areas only and by lowering the visual quality objectives from 75% of potential to possibly 60%, opportunity costs can be reduced and harvest levels increased. MM

2. The Plan should specify coordination with the Department of State Lands in the development and implementation of site specific planning for National Forest lands adjoining State Forests, including: (a) Transportation planning; and (b) Long-range, big game winter range activity schedules. NN

D. Roading

1. The Flathead Forest has taken the best approach to road management noted in our review of Forest Plans. The State recommends continued analysis by geographical units to determine where future public access is appropriate, desirable, or possible. This would serve as a more positive approach to providing the public with access to the Forest and help to alleviate the adverse impacts from an already over-roaded situation. OO

2. Restricted human use in Management Area 2B is critical to continued grizzly bear and elk use in the area. In addition, development of primitive campsites and facilities in the Glacier Slough area which has high value as summer whitetail and grizzly habitat should not be planned. Also, the State would not recommend extension of the Spotted Bear River Road to the Silvertip Cabin only for administrative use in Management Area 2. A road would facilitate increased public access (foot and horseback) into an area that is grizzly bear habitat and an elk migration corridor. PP

3. In Management Area 9 as well as Management Area 13 the State recommends the Forest restrict road use by motorized vehicles between December 1 and May 15. These areas provide key winter habitat for both deer and elk. QQ

E. Wildlife/Fisheries

1. The basic methods used to predict fish populations consistently over-estimated potential trout production. It was recognized that many forest lakes depend on adfluvial production or tributary spawning, but fish populations in lakes with impacted tributaries were held stable through the analysis with the exception of Hungry Horse Reservoir. A larger problem is that a natural recovery factor was applied against the estimated population of trout in non-wilderness streams. This generalization would be valid only if all RR

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

MM. We have considered a wide variety of methods to maintain timber production at a level satisfactory to all parties. Some visual constraints were relaxed.

NN. We already have good cooperation and coordination with the adjoining State Forests.

OO. We will continue to do road analysis on a geographic unit basis.

PP. Restricting human use in MA 2B areas will only be done if a conflict arises. There is no evidence of conflict now. The area around Glacier Slough is designated as MA 2A. It will be managed for semiprimitive nonmotorized use. No campsites or facilities are planned. The road to Silvertip has been cancelled.

QQ. These are the dates specified in the Forest Plan.

Road closures for the sake of road closures do not appear to be in the public interest. Roads should remain open unless we have a good reason to close them. The management direction for Management Areas 9 and 13 provide full authority to do this. Need for closures can be ascertained long before long-term decline in populations have occurred. We're not saying that road closures are good for wintering deer and elk, but similarly, open roads do not necessarily mean adverse effects.

streams in the area were impacted and therefore below optimal levels. This is not presently the case and therefore the contributions from natural recovery were overestimated. By far, the largest problem is the estimation that habitat improvement will contribute 30,300 fish each decade. This would mean the proposed action would generate 43 trout per acre under the improvement schedule established in the DEIS. This is far in excess of natural population production levels. These problems resulting in overestimates of trout production mean project increases in sediments and water yields will probably negate the effectiveness of measures such as pool structures in a short period of time. While this would probably not change the ranking of alternatives, it could mean the difference between an increase or decrease from present populations in the future. The State recommends the Forest re-evaluate these estimates and modify the preferred alternative to at least, maintain the trout populations at present levels. RR

2. The Forest-wide Guidelines for elk summer habitat are inadequate in their present form. The Forest-wide Guidelines should include language that facilitates the delineation and appropriate management direction for areas identified at the project level as fitting the selection criteria or being used by elk as "key" summer habitat. Size of units, silvicultural methods, seasonal use considerations, and open road densities need to be dealt with at the project level. SS

3. The State knows of no research to support a 30:70 cover-forage ratio on mule deer - elk winter range. Environmental conditions occur nearly every winter in the January-February period when elk and mule deer utilize existing thermal cover quite intensively. It is highly probable that should thermal cover be reduced to 30 percent on winter ranges, elk and mule deer populations would be adversely affected. Until research is accomplished on this subject, we recommend a conservative approach be taken toward thermal cover removal on winter ranges. TT

4. The 20-acre unit restriction guideline for management area 15C will not by itself adquately protect the summer range values for white-tailed deer. In addition, the riparian areas within MA-15C and the associated peripheral vegetation should also be protected with restrictive guidelines. Limited entry, selective harvest, directional felling and winter logging should be considered. UU

5. The Department of Fish, Wildlife and Parks has some specific areas of concern regarding Geographical Units and the proposed dispostion of these units within the Forest Plan. These concerns have been attached as Addendum A. VV

RR. The methods used to predict fish population numbers in the Draft Forest Plan were based on 20 years of data collected by the Montana Department of Fish, Wildlife, & Parks' fisheries biologists. Estimated development was coordinated with these same biologists. Lakes in the managed portion of the Flathead National Forest are, for the most part, situated in the headwaters areas of drainages with the exception of a few such as Tally Lake, Ashley Lake, Little Bitterroot Lake, etc. In most high mountain lakes, fish populations are maintained by the Montana Department of Fish, Wildlife, & Parks through fishing regulations and periodic fish stocking. Natural reproduction is inadequate due to extremely limited spawning sites. These fish populations are expected to fluctuate on the basis of angler use and stocking, but not because of natural reproduction. Fish populations in the larger, lower elevation lakes are not expected to decrease because of habitat improvement in spawning tributaries.

The recovery factor applied to estimating fish populations in nonwilderness streams is considered valid because is a continuing process in practically all watersheds in view of past management activities.

The Draft Forest Plan states that stream fish populations would be increased by 30,300 fish per decade as a result of direct habitat improvement. This means that fish numbers are distributed to 1,100 miles of stream for a total increase of 27 fish per mile per decade. Assuming 1 acre of water surface per stream means an increase of 27 fish per acre of stream in 10 years or 2.7 fish per acre of stream per year. Recent fish population studies and modeling by the Montana Department of Fish, Wildlife, & Parks indicated stream fish population levels to be approximately 87 catchable size trout (6"+) per mile of stream in 138 reaches of streams in the North, Middle, and South Fork drainages of the Flathead River. The addition of 2.7 fish per mile of stream per year is not considered a gross overestimation in view of planned direct fish habitat improvements, coupled with BMP's and Forest Guidelines.

The primary purpose for the development of riparian area management prescriptions and guidelines was to provide protection to streams, lakes, and lake tributaries. These prescriptions are in effect now and managers are including their requirements in timber management activities to reduce potential impacts. This means that the effectiveness of direct habitat improvement projects will be enhanced and trout populations will increase.

Fisheries in wilderness areas will be managed by regulations and "people management". The minimum approach may have limited site specific use, but it is unlikely to be employed to a large extent.

ADDENDUM A

Lower Swan Unit -- Swan Lake Ranger District--Major concerns in this unit are the North Fork of Lost Creek, Goat, and Squeezer Creeks. These re major bull trout spawning streams in the Swan drainage. Sediment yields in excess of present levels should be kept minimal.

Noisy Face Unit -- Unstable soils in the Krause Creek drainage should preclude logging activities [(Noisy Face N. (87)] which would increase sediment yields.

VV

Olney-Marten Creek Unit -- Tally Lake Ranger District--The Stillwater River cooridor between upper and lower Stillwater Lakes is designated as a float trail and should be upgraded from a 2C to a 2B designation.

WW

Upper Good Creek Unit -- The Good Creek drainage is scheduled for 2,710 acres of clearcuts from 1983 to 1988. There appears to be a high potential for exceedance of water yield guidelines. Riparian over-grazing is already causing bank erosion problems in the drainage. The State recommends this unit be closely monitored and water yields be maintained within guidelines.

XX

Sylvia Lake Unit -- Hand and Sheppard Creeks are identified as important westslope culthroat spawning streams yet both are scheduled for large timber sales (49.5 mmbf total) in 1989 and 1990, and both streams are expected to exceed water quality guidelines. The State recommends more conservative timber harvest with intensive monitoring before proceeding with the estimated sale volume.

YY

Upper Griffin Unit -- Upper Griffin Creek contains a pure strain of westslope culthroat and should not be allowed to exceed water quality guidelines. Increased sediment and water yields should not be allowed in Herrig Creek as it is an important spawning tributary to Little Bitterroot Lake.

ZZ

Ashley Lake Unit -- Ashley Lake supports a unique strain of rainbow-culthroat hybrid. The lake produced a world record fish in 1982 and is a very significant fishery for trophy trout. The fishery depends on natural reproduction, and spawning tributaries are very limited so increased sediment yields should be avoided at all costs.

AAA

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

SS. The Forest feels that elk summer range, and especially the moist-site habitats on the Flathead National Forest, are not a factor limiting elk populations. When a moist site has an impactive summer project, there are usually many alternative sites that are adequate, but perhaps not as attractive as the elk's traditional moist site. The Flathead's forest habitat types probably include more moist-site habitats and other alternative summer habitats for elk than most forests in the Cooperative Elk-Logging Studies. The Forest Plan does not designate elk summer habitat as a special management area. The Forest policy is consistent with current and past Forest policy, during which time elk populations have increased. The existing and Forest Plan policy does not seem to be detrimental to elk populations.

TT. We agree that research is limited in establishing the desired relationship between cover and forage for management of winter habitats. Most winter range for elk is presently in excess of 70 percent forage on the Flathead National Forest. These areas likely do not represent the desired relationship. Cover properly distributed on these areas would improve their usefulness as winter habitat. Research from the Flathead National Forest, conducted cooperatively with the State, clearly indicates that during most winters, snow conditions prevail for short periods of time that require elk to seek cover for their existence.

To run the FORPLAN model and keep it from assuming that more forage is always better, a constraint of 30 percent winter themal cover was established. Its correctness over time will have to be monitored and evaluated in the planning process.

UU. Ongoing whitetailed deer research was available in the Upper Swan River drainage that detailed the location and habitat needs of the whitetailed deer, the MA 15C (Timber) emphasis was adapted to include whitetailed deer summer habitat needs. The primary change between MA 15 and 15C was the change from 40-acre to 20-acre cutting units. Research indicates that 20-acre units provide good summer habitat. Riparian areas were demonstrated to be a key component of whitetailed deer summer habitat. Although not mapped as a management area, riparian areas and their importance to wildlife is recognized. The primary emphasis of riparian area management is wildlife habitat, particularly old growth, which is compatible with the needs of whitetailed deer. The full extent of how this key whitetailed deer summer range will be managed must consider riparian management direction due to the numerous riparian areas within whitetailed deer summer habitat.

Emery Creek Unit -- Hungry Horse Ranger District, Emery, Hungry Horse and Tiger Creeks are important spawning tributaries for cutthroat migrating out of Hungry Horse Reservoir and all three drainages are scheduled for extensive timber harvest in the next six years. Sediment yields should not exceed standards necessary to maintain cutthroat spawning in these streams. BBB

East Side Unit -- This unit is noted as containing major cutthroat spawning streams, but most of the area is allocated to timber including some riparian timber units. Riverside and Felix Creeks are the most important tributaries; and these are scheduled for harvest in 1984 and 1987. The riparian timber units should be reclassified riparian fish and wildlife units.

West Side Unit -- This unit is noted as containing seven important cutthroat spawning streams to Hungry Horse Reservoir, but most of the areas along the reservoir are allocated to timber including riparian timber. Doris and Wounded Buck Creeks are two particularly important streams allocated to riparian timber. All riparian timber units should be allocated to riparian fish and wildlife management. CCC

Trail Creek Unit -- Glacier View Ranger District, Trail and Whale Creeks are closed to fishing due to their importance as spawning tributaries. It is difficult to assess total impacts on the streams since many cut through several geographic units. Whale Creek cuts through three units, and the total scheduled harvest in the drainage exceeds 21 mmbf. The importance and vulnerability of spawning tributaries cannot be stressed too much. DDD

Whale-Coal Unit -- Calculations by the Department of Fish, Wildlife and Parks biologists indicate that fine sediments in Coal Creek are already at least 80 percent over natural yet the drainage is scheduled for extensive harvest over the next five years (26 mmbf). The speed and extent of entry will probably exceed the ability of a monitoring program to detect problems therefore over-runs in water and sediment yields are entirely possible. We would recommend the forest take a more conservative approach at timber harvest in this unit. EEE

Big Canyon-Teakettle and North Fork Valley Units -- Two of these units include spawning streams that are closed to fishing but are scheduled for timber harvest. In addition, the Canyon-Teakettle Unit has erosion problems at the mouth of Kimmerly Creek where logging is scheduled and the Canyon Creek road has annual slumping problems. The timber harvest in these units should include intensive water yield and sediment monitoring. FFF

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

VV. Sediment yields are kept to a minimum in all streams, especially major bull trout streams.

WW. This has been done in the Forest Plan.

XX. This will be done.

YY. We feel that our levels of timber harvest and monitoring are at the proper intensities to protect the fish habitat in these creeks.

ZZ. BMP's and riparian area management standards should be adequate to protect this spawning tributary. We will monitor water quality very closely.

AAA. We have planned and scheduled management activities in this geographic unit to protect the visual and water quality attributes. A problem exists with management emphasis of the intermingled ownership in this area.

BBB. We agree.

CCC. Riparian timber designations are designed to minimize increases in sediment yield. We believe changes in water quality, if any, will be small enough so as to not affect cutthroat spawning.

DDD. We recognize the importance of Trail and Whale Creeks as spawning habitat.

EEE. We shall use Montana Department of Fish, Wildlife, & Parks' data in evaluating new timber sales in this drainage.

FFF. We will do this.

State of Montana
Office of the Governor
Helena, Montana 59620

TED SCHWINDEN
GOVERNOR

M-1240

RECEIVED
APR 2 1985
FLATHEAD N.F.

March 15, 1985

Mr. Edgar Brannon
Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

Dear Mr. Brannon:

The State of Montana appreciates this opportunity to review and comment on the supplemental Draft Flathead National Forest Plan (Plan) and Environmental Impact Statement (EIS). Your agency's cooperation and presentation of the Plan to Montana's interagency planning task force and Ad-Hoc Forestry Committee is also appreciated. The attached comments reflect the task force's review and concerns regarding the Plan.

The supplemental documents continue to be among the better forest planning related documents that the state has reviewed recently. However, the supplements do not respond to the state's previous 1983 forest plan comments. We hope that the Final Plan and EIS will provide a satisfactory response and consideration of the previous comments, as well as the state's additional comments on these supplemental documents.

Sincerely,

TED SCHWINDEN
Governor

Attachment

RESPONSE

Response starts on second page.

State of Montana
Office of the Governor
Helena, Montana 59620

TED SCHWINDEN
GOVERNOR

MONTANA'S COMMENTS ON THE 1984 DRAFT FLATHEAD NATIONAL FOREST PLAN AND ENVIRONMENTAL IMPACT STATEMENT

In general, the Flathead National Forest (FNF) Plan and the Draft Environmental Impact Statement (EIS) supplements continue to be among the better documents relating to forest planning we have reviewed. The documents, however, contain little information about planned implementation or evaluation efforts. Guidelines should be included so that reviewers can assess how the plan would be put into effect, and what actions would be necessary to achieve its goals. Procedures are also needed to insure that the objectives of the plan are being met, to detect changes in environmental quality, and to modify management activities if necessary. A

It is unfortunate that the documents were unable to respond to the state's previous 1983 forest plan comments regarding substantial concerns about stream sedimentation, timber harvest levels, decreases in wildlife security habitat, timing of projected water yield increases and others. Of primary concern is the lack of any meaningful new information pertaining to water quality and sediment production related to implementation of the proposed Plan. While improved impact modelling procedures are available, they do not appear in the Plan, or impact evaluations for water quality. Without a basis of adequate information for impact projections, it appears that implementation of the Plan will result in increased sediment yields in excess of forest service management guidelines and potential violation of state water quality standards. B

Wildlife.

a. General.

Narrative summary of the preferred alternative 11 (p. II-103) pertaining to management of potential winter ranges does not appear to agree with the graphics presented on page II-71. The graphics indicate that 90% of elk and mule deer and 75% of whitetail ranges will be managed, rather than 75% for all as indicated in the text. C

The summary (page II-103); indicates that timber harvests in decades 1 and 2 "must come from the same drainages as past timber harvest." Recommended cover to forage ratios and distribution of age classes and units, however, are already being compromised in the current timber sales program. Two more decades of cutting in the same drainages will further degrade wildlife habitat. D

Big-game management on the FNF indicates a strong preference toward roads and habitat manipulation as management tools. The Draft EIS (IV-10) states that "big game winter range habitat improvement in timbered areas, involve E

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

A. Because of this and other corcerns about implementation, Chapter V - Implementation, of the final Forest Plan has been strengthened in regards to monitoring and evaluation. The changes should ensure that the objectives of the Forest Plan are met.

B. The intent of the Proposed Forest Plan and Draft EIS Supplements was not to resolve or discuss the concerns raised in the reviews of the Draft EIS and Proposed Plan. We have responded to the State's 1983 comments (see State of Montana comments and responses).

C. The reference to over 75% (on page II-103 of the Draft EIS Supplement) refers to the minimum amount of the potential winter range for all species where improvements in forage production would occur. This has been changed in the Forest Plan to reflect 75% for whitetailed deer and 90% for mule deer and elk.

D. The wildlife habitat will be monitored. If decreases occur, adjustments in the timber program will be made.

road building and timber harvest which results in roadless and wilderness values to be foregone." The Draft EIS (II-82) also states that roads are "a support item needed to implement the primary land management objectives such as timber and wildlife management." Wildlife management concerns should drive, not justify, road building and timber harvest in areas with significant wildlife values. E

Under the direction of the Northwest Power Planning Council (NWPPC), a mitigation plan has been designed to protect and enhance wildlife and habitat adversely affected by the construction of Hungry Horse hydroelectric project. Since the plan significantly involves the FNF, its addition as an addendum to the forest plan, after its adoption by the NWPPC, would be appropriate. F

b. Grizzly Bear Management Guidelines.

The grizzly bear management guidelines are excellent. They include a good description of desirable habitat components and recognize the needs of other threatened and endangered species like the gray wolf and woodland caribou. Management practices, including eventual timber sales near the Swan/Clearwater Divide would conform to the Long-Range Grizzly Bear Habitat Activity Schedule and would maintain adequate hiding cover for resting and travel. New roads, especially any planned collector and arterial roads, should also conform to the Activity Schedule and to existing guidelines. G

If management Situation 2 areas are those considered unnecessary for survival and recovery of the grizzly bear (p. E-2), it is then inconsistent to say (p. E-3) that some areas mapped as Situation 2 will be needed by bears as part of their total home range. If the areas are needed, they should be mapped as Situation 1. H

The FNF's position on Situation 2 delineation for private lands in areas like the Swan Valley, weakens the total effort to maintain important habitat for grizzly bear. Even though the FNF is unable to exercise exclusive control over activities and programs that may affect the grizzly, the delineation of these areas based on habitat capability rather than ownership would establish guidance for activites and programs on non-forest lands, provide support for recommendations pertaining to activities and programs on non-federal lands, and represent a more unified approach to grizzly habitat maintenance and management. I

On p. E-6, 13a, the road management objectives should allow for densities of less than 2 miles in Situation 2, as many people (even agency people) may view standards and guides as objectives. Because of this, they may attempt to maintain 2 miles of open road in all Situation 2 areas. J

The distribution of cover requirements for wildlife should not be based upon a sale or project area, since their size and shape vary in each sale proposal. Cover requirements for wildlife should be applied to a definable land area, such as a geographical unit, management area, drainage, or timber stand. K

Actions proposed to reduce illegal grizzly mortality during big game hunting seasons, p. E-9, could be reordered. Road closures in key grizzly bear habitat should be a higher priority and easier to implement than a black bear hunting regulation modification. L

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

E. The reference to big game winter range habitat improvement in timbered areas (page IV-10 of the Draft EIS Supplement) is in relation to the roadless resource. As used in context here, the reference to roads supporting wildlife (page II-82 of the Draft EIS) is still valid.

F. The Northwest Power Planning Council's mitigation plan was considered during formulation of Alternative 17 (Preferred Alternative). It will be further considered on a project basis when finalized.

G. This will be done.

H. Some Management Situation 2 areas in the Swan Valley have been redesignated Management Situation 1.

I. The Federal Government has no jurisdiction over management of private lands. We will suggest and recommend activities and programs.

J. The standard of "2 miles" has been deleted and the point clarified in the Grizzly Bear Guidelines in the Forest Plan.

K. Basing cover requirements on a sale or project area rather than some larger unit results in cover being more widely distributed.

L. The listing is not in order of importance or priority.

There is no literature support for optimum grizzly bear habitat consisting of 40% security cover and 60% open. However, there is clear evidence that increased roading is damaging to grizzly bears. Habitat manipulation as a means of improving bear habitat should be very carefully evaluated prior to implementation. M

The FNF should explore additional ways to provide legal protection for the Trail Creek Grizzly Bear Management Area to insure that this extremely valuable wildlife habitat is maintained and preserved for grizzly bear recovery. N

Fisheries.

It appears that the FNF is offering to mitigate degraded water quality by improving the physical habitat. Unfortunately, improvements in physical habitat alone cannot improve a fishery when water quality is limiting. Preventing habitat deterioration is the most efficient and least costly means of maintaining stream fisheries. O

Much of the fisheries portion of the Draft EIS supplement is based on the premise that habitat improvement structures can compensate for declines in the fishery caused by activities such as road construction and timber harvest. This premise has never been substantiated by work on the FNF. The necessary monitoring program to evaluate the effectiveness of the program is not included in the Plan. In addition, limiting factors for fish and the concurrent habitat improvement practices are not detailed in the documents. This makes it difficult to determine whether the fisheries' goals can be met. P

As more watersheds are developed, it seems likely that the overall trend of the fishery will be a decrease from current levels. The Draft EIS preferred alternative 11 predicts an increase of 27,000 catchable trout (Table II-1) between decades 1 and 5, an average net gain of only 9.5 trout per acre of habitat improvement. Given the costs of habitat improvement work, emphasis should be given to reducing degradation of the fisheries, and hence the need for habitat improvement. Q

Fisheries' evaluations of the alternatives may unfairly penalize those alternatives designating large wilderness acreage, as the system measures the trout and the affects of habitat manipulationin non-wilderness streams only. Wilderness areas would be expected to maintain their fisheries at near optimum levels and therefore would contribute an important, but differing, portion the total fishery as proposed wilderness acreage is varied between alternatives. R

The holistic forest- wide approach to evaluating fish numbers and water quality (primarily sediment yield) has little, if any, relevance to management concerns for individual watersheds. Sediment yield, fish numbers, species, and sites must be evaluated by individual watershed, as should any anticipated reductions in fishery outputs as a result of forest management activities. Without this type of analysis, the reader is limited in his ability to judge the merits of the various alternatives presented. It would be more accurate to conclude that the present data base is inadequate to properly evaluate effects of sedimentation on individual stream fisheries. The plan should make a commitment to improved monitoring in the future. S

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

M. We will proceed cautiously with the implementation of these guidelines.

N. We feel that designating this area as a grizzly bear management area is the best alternative for recovery of the grizzly bear. The grizzly bear is managed under the broad Congressional direction found in the Endangered Species Act of 1973. The Act requires that all Federal projects, including National Forest management activities, must not adversely affect the grizzly bear or its habitat, and must strive to reach a recovered population. The Flathead National Forest has more grizzly bears and better habitat than any other National Forest in the continental United States. We feel that good grizzly bear management can co-exist with good timber management. Providing for grizzly bear security is perhaps the key grizzly habitat need that must be coordinated with logging activities. Large portions of the Flathead National Forest are classified as Management Situation 1 where the grizzly bear is the primary resource being managed. That does not mean to the exclusion of other resource management options. Both grizzly bears and timber will continue to be important resources produced on the Flathead National Forest.

There are 5,671,864 acres of occupied grizzly bear habitat in the Northern Continental Divide Ecosystem with varied population estimates of 440 to 680 bears. On the Flathead National Forest, we have identified 108,732 acres for management as primary grizzly bear habitat. Management decisions on these acres will favor the needs of the grizzly bear when grizzly bear habitat and other land-use values compete.

O. The water and the situation within the water, together, make up the physical habitat. Water quality will be maintained by following Best Management Practices and by improving conditions within the water where feasible.

P. Our premise is that fish habitat improvement structures are not necessarily just to compensate for management activities, but also to compensate for natural habitat limitations which may vary from site to site. We have strengthened our monitoring direction in the Forest Plan to include monitoring fish densities. The limiting factors and effects of habitat improvements on other resources are listed under section I, Fish Habitat Improvement, in Chapter IV of the EIS.

Water Quality.

a. General.

In general, the FNF Plan and Draft EIS disregards the downstream, off-forest impacts of forest management practices. Problems such as increased water and sediment yields continue to cause problems as they move downstream from forest boundaries. This underscores the need for a more substative commitment in the Plan to fishery and water quality monitoring programs on the FNF. T

As mentioned in our 1982 comments, the present net value (PNV) of the forest, measured in terms of appraised value of timber stands, and the area's aesthetic and water quality value are separate considerations. The FNF must recognize the concern about the relationship between upstream water quality/ watershed degradation and downstream water quality impacts (see Issue, page II-79, Draft EIS). This is particularly important since the FNF manages over one half of the total land area upstream from Flathead Lake. Concerns associated with non-point source pollution, particularly phosphorus generated from sediment sources, should be addressed through development of the forest plan, watershed management plans, and individual project environmental assessments. Cumulative impacts from forest activities warrant continual evaluation. U

Although management alternatives discuss impacts to water quality and fisheries, specific mitigation should be considered. It may be more advantageous to consider development of Best Management Practices (BMP's) instead of stating that "mitigation will be available per local needs." V

We are pleased that the Draft EIS (II-79) raised the issue of coordinating forest land management with adjacent private land management to protect water quality. We are aware of the FNF's participation and contribution to the water quality monitoring master plan developed by the Flathead Basin Commission (FBC). We encourage the FNF to incorporate all of the fbc master plan water quality monitoring sites in the Forest Plan for the FNF. W

The Draft EIS (IV-23) gives a good discussion of the impacts of development of microhydroelectric projects within the wilderness. We appreciate the FNF's concern. The discussion, however, does not touch on the impacts of microhydro development on non-wilderness and private lands. Although microhydro was not discussed in the original Draft EIS, many of the potential overall impacts are now better known. It is appropriate to include a discussion of microhydro development in the forest planning process just as other resource development issues, such as oil and gas, are considered. X

b. Sedimentation.

Very little consideration has been given to water quality impacts as a result of forest activities. Even though statements are made that water quality standards will not be exceeded, the same methodologies and assumptions used to model the impacts of forest management alternatives for the original Draft EIS have been used in the new Draft EIS Supplement. Y

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

Q. The Preferred Alternative (Alternative 17) in the EIS shows a decrease from the first to the fifth decade of 110,000 catchable trout. This decrease will occur even though habitat improvement projects are carried out. Emphasis is given to reducing degradation through Best Management Practices, logging and road building guidelines, riparian management direction, and monitoring requirements. The true cost of habitat improvement cannot be measured without considering the economic and social values foregone if timber harvesting is eliminated in order to avoid mitigation costs. To eliminate all possible man-made effects on the water and fishery resource would require halting all surface-disturbing activities. Halting National Forest timber harvesting would "cost" the local economy 500 direct employment jobs and 1,000 indirect employment jobs each year. In addition, payments to the County would be reduced by one and one-half million dollars per year. The economic and social costs of not harvesting timber far out-weigh possible impacts to the fishery resource. The fishery resource is also important, therefore, mitigating measures can be economically justified.

R. The Draft EIS reflects basic Forest Service policy that a managed forest can provide more net public benefits than an unmanaged forest. Obviously, the wilderness resource is somewhat of an exception to this generalization. The Draft EIS attempted to indicate that a natural catastrophe in a wilderness, like a repeat of the 100- or 500-year flood similar to the 1964 flood, can destroy a productive fishery. Man, in a wilderness setting, can repair and enhance the destroyed habitat and facilitate fishery recovery. In a wilderness setting, the option to "repair" that destroyed or damaged fishery is foregone. The introduction of brook trout, rainbow trout, perch, bass, kokanee salmon, mackinaw, and northern pike indicates the public has fishery interests beyond the native fishery.

The approach used to estimate fish populations in the Draft EIS Supplement was similar to the Draft EIS. We do not agree that wilderness always provides an optimum fishery. A wilderness fishery is a natural fishery. Whether that is "optimum" depends on the preference of each individual fisherman and the goals of the managing agencies.

Table VI-2 in the Forest Plan shows wilderness and nonwilderness trout populations of the Flathead National Forest. The number of fish in most of the roadless areas (potential wilderness areas) is low due to the topography and lack of fish habitat.

S. At this time, we do not have specific data for individual streams. We will be working toward achieving that goal. In the meantime, we will be following the detailed monitoring requirements.

Representatives from Region 1 USFS Office presented an improved approach to the treatment of sediment production and water quality concerns in the forest plans to the Department of Health and Environmental Sciences (DHES) on July 3, 1984. Neither the FNF Draft EIS Supplement, or the Forest Plan Supplement, addresses this improved approach to water quality concerns.

As a result, the sediment yield calculations being used in the plan could easily be off by several orders of magnitude.

Without better information, the FNF preferred alternative likely follows the same pattern of increased sediment yields in excess of USFS management guidelines, resulting in potential violation of state water quality standards. Z

c. Monitoring.

To be satisfactorily implemented, sufficient funds must be available to support a responsible monitoring program. Lack of adequate monitoring, particularly watershed monitoring continues to be a major concern. A recent Forest Service summary report regarding the watershed policy and review for the northern region states that: "Watershed monitoring and inventory activities are presently being funded significantly below estimated low level needs." At present funding levels, these monitoring activities will be unable to evaluate the effects of land management activities on soil and water resources, document compliance with legal requirements, validate coefficients and assumptions used in the planning process, or respond to public inquiries and appeals. AA

Timber

Although the preferred alternative plans for a greater, long-term, sustained yield than other newly proposed alternatives, there will be a sharp decline (from current direction) in timber outputs in the first three decades of the planning period. This decline and the associated decline in employment and income is expected to be off-set by increases in the recreation sector of the economy. The current slump in the wood products component of the Western Montana economy has not resulted from a shortage of stumpage. However, if a full-scale recovery in wood products takes place, stumpage supply will become an issue, especially in the first three decades. The decline in FNF harvests scheduled under the preferred alternative may adversely affect the wood products component of the Flathead County economy. Within the Plan, additional consideration should be given to the expected demand for stumpage and to the major role the FNF plays as a stumpage supplier now and in the future. BB

Helicopter sales are scheduled for 1986, 1987 and 1989. We question whether they are economically justifiable, based solely on the direct costs and benefits, especially when the volume per acre is predicted to be only 15.5 MBF in 1987. CC

All alternatives were developed by imposing the culmination of the mean annual increment constraint on timber growth. However, by managing some of the better sites on a much shorter and possibly more economic rotation, the long-term demand for mature timber on marginal sites may be reduced. Timber could be supplied sooner from the more productive sites, possibly reducing the need for additional road construction and thereby preserving more roadless areas and old growth timber. DD

T. The Forest Plan includes monitoring for fisheries and water quality and an extensive list of Best Management Practices.

U. Our monitoring program should measure the cumulative effects of Forest management activities.

V. As mentioned above, Best Management Practices are included in the Forest Plan.

W. We are coordinating very closely with the Flathead Basin Commission. We have also added some additional sites.

X. Since all microhydro proposals have been withdrawn, no additional comments have been added.

Y. It was not the intent of the supplement documents to respond to concerns expressed about items in the original draft. Only the roadless evaluation and grizzly bear management guidelines were handled in the supplement documents. Refer to response A on page VI-99 for the response to this concern.

Z. The EIS now uses the approach for treating water quality concerns that the State has suggested. The controversial sediment yield models are no longer used in the EIS. (See comment/response A on page VI-99).

AA. There will only be so much money with which to manage the Forest, including monitoring. We are committed to carrying out a monitoring program in a way which evaluates the effects of management activities or limits the activity.

BB. The Forest Plan provides for an average annual harvest of 100 MMBF of scheduled timber sales plus an additional 5 MMBF of salvage sales. Thus, in the first decade we will offer approximately 105 MMBF annually in new timber sales. In addition, the current level of timber volume under contract, but not cut, is at a record high of nearly 470 MMBF. Industry generally holds approximately 300 MMBF of timber uncut and under contract as a hedge against changing market conditions. Therefore, there exists about 170 MMBF of excess volume under contract which can be cut at any time. This gives the timber industry as much as 122 MMBF annually for cutting during the first decade while leaving them with their normal 2- to 3-year supply of uncut volume under contract. Industry's average annual cut during the past decade has been only 101 MMBF.

Industry has agreed to a plan that would allow the Flathead National Forest's sale offering to fluctuate annually as much as 30 MMBF, but average 100 MMBF for the decade. Timber market conditions, uncut volume under contract in excess of 300 MMBF, and industry needs would be the factors used to determine the Flathead National Forest's sale offering.

The amount of purchaser road credits proposed for the FNF gradually increases until the year 2030, and then drops to zero. Initial timber sales and road construction in each drainage should be carefully evaluated to insure that they are in the public interest and will not significantly impact other important resource values. EE

Roadsides and areas disturbed by timber management activity should be monitored and, if necessary, treated to prevent the introduction and spread of noxious weeds. We support an integrated pest management (IPM) approach which uses the best combination of chemical, biological, and mechanical weed control methods. FF

Riparian timber management costs are high and are allocated as a cost to FNV in alternatives which increase timber harvest (Draft EIS III-11). Preferred alternative 11 allocates 22% (Draft EIS, Table III-4) of the riparian area to timber management. Given the high costs of management and predicted problems with sediment and water yields, it would seem to be more desirable to allocate the majority of the riparian areas to riparian-wildlife, where timber harvest is unscheduled. GG

Wilderness

The preferred Plan proposes to add 48,854 acres of wilderness to the FNF along the Swan Front and the north end of the Bob Marshall Wilderness. We urge the planners to reconsider the Governor's May 10, 1984 wilderness recommendation to the Montana Congressional Delegation for a 97,020 acre addition to the Flathead portion of the wilderness system as follows:

Area	Acres
1482 Tuchuck	16,700
S1485 Jewel Basin	15,360
A1485 Swan Front	64,000
1500 Mission Addition	960
TOTAL	97,020

A detailed discussion of the wilderness values of these areas, taken from the Governor's 1984 wilderness recommendations, are attached to these comments for your consideration. HH

Recreation.

The proposed FNF Plan would increase the current wilderness recreational visitor day potential from 319 MRVD's to 333 MRVD's, an increase of 4.4%. This would provide about only 41% of the projected use (809 MRVD's) by the end of the planning cycle. The Draft EIS states that "current capacity for wilderness recreation will be exceeded by the year 2015" (p. II-3). Table VI-1 in the plan, however, indicates that capacity will be exceeded by about the year 1996. II

Although the Draft EIS attempts to designate appropriate wilderness areas, it appears to discriminate against both the quantity and quality of wilderness recreation created. The Draft EIS (II-38, Table II-1) shows that designating current roadless areas to wilderness would cause a net loss of 33,000 RVD's. JJ

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

CC. We have redefined the management goals for Management Area 16 stating that roadless logging methods will be used unless site specific analysis determines that a road system is economically and environmentally prudent.

DD. Forest-wide averages have been used in the FORPLAN model. There will undoubtedly be adjustments to the mean annual increment on high and low productivity areas.

EE. All timber sales and road construction projects are carefully evaluated to ensure that they are in the public interest and that they will not significantly impact other resource values.

FF. We are taking a more active position to combat noxious weeds.

GG. We have considered all aspects of riparian area management and still plan to harvest some timber in suitable riparian areas. Best Management Practices set standards for the management activities.

HH. In the Forest Plan, we have proposed a total of 98,080 acres to be classified as wilderness. All are within the 1485 Roadless Area.

Local Area	Acres
Slippery Bill	6,295
Jewel Basin	31,783
Bunker Creek/Swan Front	54,815
Limestone Caves	5,187
	98,080

II. These figures are being clarified and corrected for the Forest Plan and EIS.

Unless the FNF intends to restrict use, the reason for the loss is not clear. Indeed, experience has shown that wilderness classification will often increase visitor use. JJ

Equally puzzling is the statement (Draft EIS, IV-3) that there is significant off-road vehicle (ORV) use in the Swan Crest, and that as wilderness designation displaces this use, there could be significant soil and water impacts as ORV use is concentrated in new areas. The amount of ORV use needs to be documented, and if it is significant, it is probably not compatible with current roadless area management. It would seem that other, less fragile areas of the forest are more appropriate for ORV use, and that this is a management, not a wilderness problem. KK

We are concerned that the Plan's economic analysis does not properly emphasize the importance of recreation in ranking the alternatives. Table II-1 (Draft EIS, p. II-55), however, identifies the present value benefits of recreation for the preferred alternative as $330 million, compared to $556 million for timber. Clearly, recreation makes a significant contribution to the local economy. LL

Wilderness recreation continues to grow as a use of the FNF. If primitive recreation is to be given equitable consideration with other forest values, then considerably more acreage should be added to the wilderness system than is included in the proposed action. MM

It would be helpful if the Plan included a display of the effect of each alternative upon elk hunter opportunity. In determining this effect, an estimate of the contribution of road closures should be included. NN

Range

We recognize that livestock grazing is not a major use of the forest, however, we question whether the range resource has been given adequate treatment in the proposed plan and Draft EIS Supplements. Livestock can utilize the significant amount of forage. Although livestock may browse or trample some tree seedlings, they can also enhance regeneration by reducing grass competition, controlling brush or exposing mineral soil. Carefully managed livestock grazing can also improve forage quality and availability on big game range, if the season of use is not in conflict. OO

Roads.

Figure II-13, if the graphics are correct, indicate the FNF will construct more roads than needed. Figure II-13A, for the preferred alternative, indicates more miles of unrestricted access in the summer months over the previous preferred alternative, and represents a road management approach inconsistent with current efforts between the FNF and the MDFWP. In Table II-8, total road costs are projected to be higher in the new preferred alternative than the previous preferred alternative and, again, seem inconsistent with our understanding that the majority of new roads will be built for timber management activities, and closed at other times and for other uses. These points should be clarified. PP

RESPONSE TO STATE OF MONTANA (OFFICE OF THE GOVERNOR) (Continued)

JJ. Table II-1 of the Draft EIS shows the net loss between Alternatives 8 and 11 of 85,700 RVD's (recreation visitor days) annually. Alternative 17 also shows a loss of RVD's. We feel that this net loss of RVD's on the Flathead National Forest will be due to the application of use restrictions in wilderness.

KK. The statement you referred to in the Draft EIS states that erosion may occur in the lower portions of the watershed because ORV use has been displaced there from areas such as the Swan Crest. The ORV use occurring in areas such as the Swan Crest is by motorcycles and snowmobiles. ORV use, wherever it occurs, will be monitored and, if resource damage occurs, it will be controlled or stopped.

LL. Recreation does make a significant contribution to the local economy and we have tried to reflect this in the economic analysis.

MM. We are striving for a broad mix in recreational uses and we feel that we cannot achieve this mix if we have significantly more wilderness.

NN. It is impossible to estimate and display all the various relationships or situations that exist or that individuals would like to see. Some relationships are discussed in a general Forest-wide condition and would be quite variable on a site-by-site basis.

OO. We feel we have adequately referenced the range resource. In addition to the benefit of grazing, some resource degradation occurs. If requests for more grazing occur, they will be evaluated on a case-by-case basis.

PP. Your concern over roads - open miles during the summer, road costs, and road densities - are understood by the Forest Service. These statistics contain a very wide margin of possible error. Important road management data contained in the Forest Plan includes the numerous Forest-wide and management area standards that require consideration of wildlife habitat security needs, reducing road costs, and considering overall road densities in making management decisions. Even though we will continue to build more roads to complete our transportation system, open road mileages, during any season, will not likely exceed current levels. In fact, the District Rangers now report that current open road mileage is less than we had in 1980 at the beginning of the Flathead National Forest planning processing. Similarly, road standards and costs have been decreasing. This will have a positive effect on wildlife, especially big game security.

TUCHUCK - 01482

Forest: Flathead/Kootenai
1983 Roadless Area Net Acres: 19,820 (17,520/2,300)
Recommended Wilderness Acres: 19,000 (16,700/2,300)

I. WILDERNESS ATTRIBUTES:

This remote area straddles the north end of the Whitefish Range, just south of the U. S. - Canada border and a few miles west of the North Fork of the Flathead River.

Tuchuck is characterized by steep, glaciated cirque basins carved in limestone bedrock unique to this part of the Whitefish Range. Limestone caves are an interesting feature of the area. Much of the area was burned in the 1910, 1917, and 1929 wildfires which resulted in open slopes producing rich crops of huckleberries and other important grizzly bear foods.

Views of Glacier National Park from the Tuchuck area are spectacular.

II. RESOURCE VALUES:

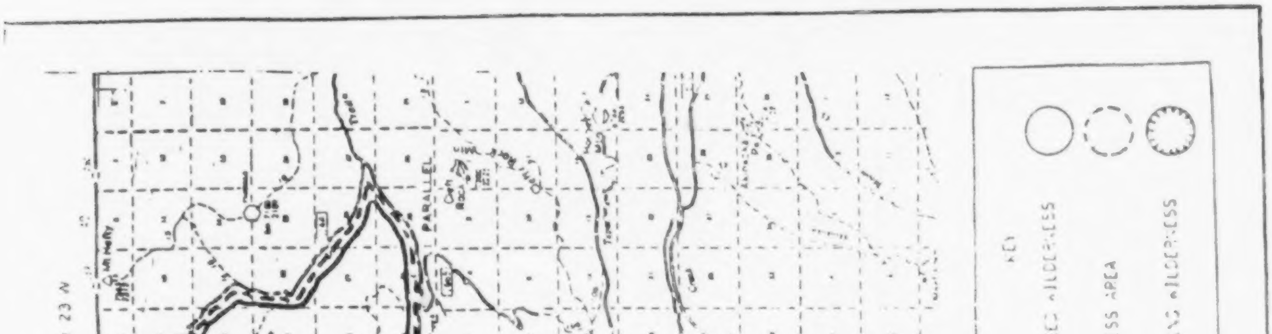
Timber productivity is low; wilderness designation would involve minimal timber conflicts.

Seismic data and the geologic structures present suggest a high potential for oil and gas in the area. No leases have been issued.

Wildlife and fishery values are extremely high. Tuchuck represents some of the best grizzly bear and gray wolf habitat in Northwestern Montana and is considered to be very important for the recovery of these species. Streams draining the area are critical to spawning bull trout and support native cutthroat trout. The area supports an elk herd and is known for its trophy mule deer.

III. BOUNDARY RATIONALE:

The proposed boundary generally follows the Forest Service 1983 roadless inventory boundary. It has been drawn back from the Trail Creek Road somewhat to accommodate snowmobile and timber interests.


BRITISH COLUMBIA
R 24 W
R 23 W
T 37 N
T 36 N
WHITEFISH
J482
PARALLEL
FLATHEAD
LINCOLN CO
RANGE
STILLWATER
KEY
PROPOSED WILDERNESS
ROADLESS AREA
EXISTING WILDERNESS

JEWEL BASIN - S 1485

Forest: Flathead
1983 Roadless Area Net Acres: 68,569
Recommended Wilderness Acres: 15,360

I. WILDERNESS ATTRIBUTES:

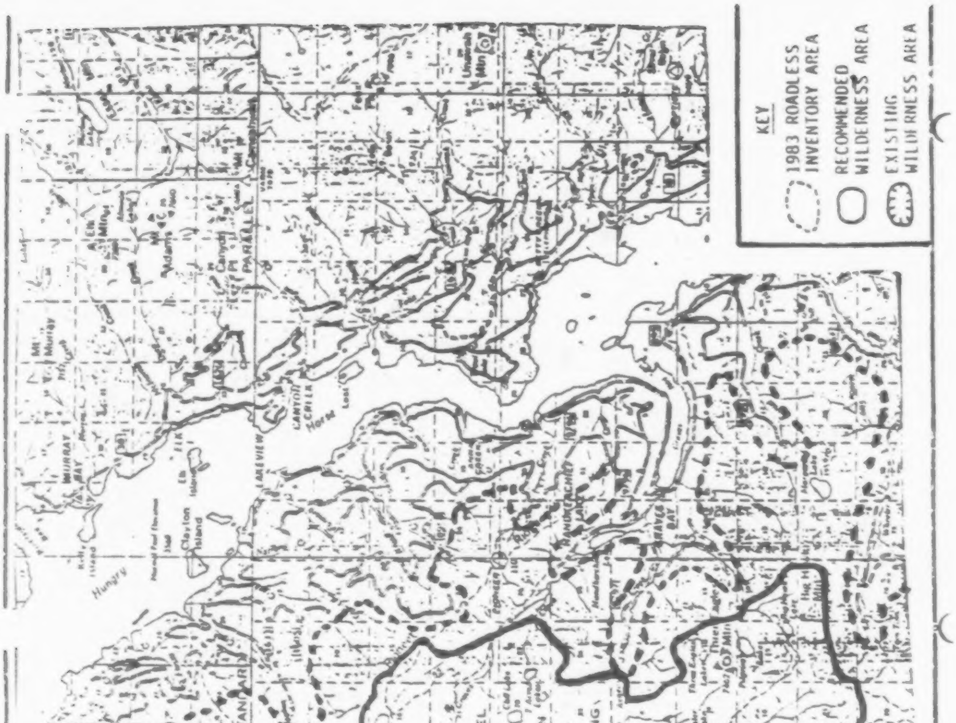
It is recommended that the Jewel Basin hiking area be classified as wilderness. The exceptional qualities of this lake-studded alpine area have long been recognized. It includes 28 lakes, numerous streams, rocky peaks, lush meadows and rich alpine vegetation. It deserves as much protection as the law can extend.

II. RESOURCE VALUES:

Since it is already managed for primitive recreation, conflicts are minimal. Oil and gas leases have been issued on a no-surface occupancy basis.

III. BOUNDARY RATIONALE:

The boundaries would be consistent with the existing hiking area.


KEY
1983 ROADLESS INVENTORY AREA
RECOMMENDED WILDERNESS AREA
EXISTING WILDERNESS AREA
JEWEL
BASIN
HIKING
AREA
Tongue Mtn
Mt Aeneas
STANDARD
LAKEVIEW
MURRAY BAY
Mt Murray
Clayton Island
Hungry
Wheeler Mtn
Crater Mtn
GRAVES BAY
PARALLEL
Canyon Cr
Adams Mtn

SWAN FRONT - A 1485

Forest: Flathead/Lolo
1983 Roadless Area Net Acres:
Recommended Wilderness Acres: 64,000

I. WILDERNESS ATTRIBUTES:

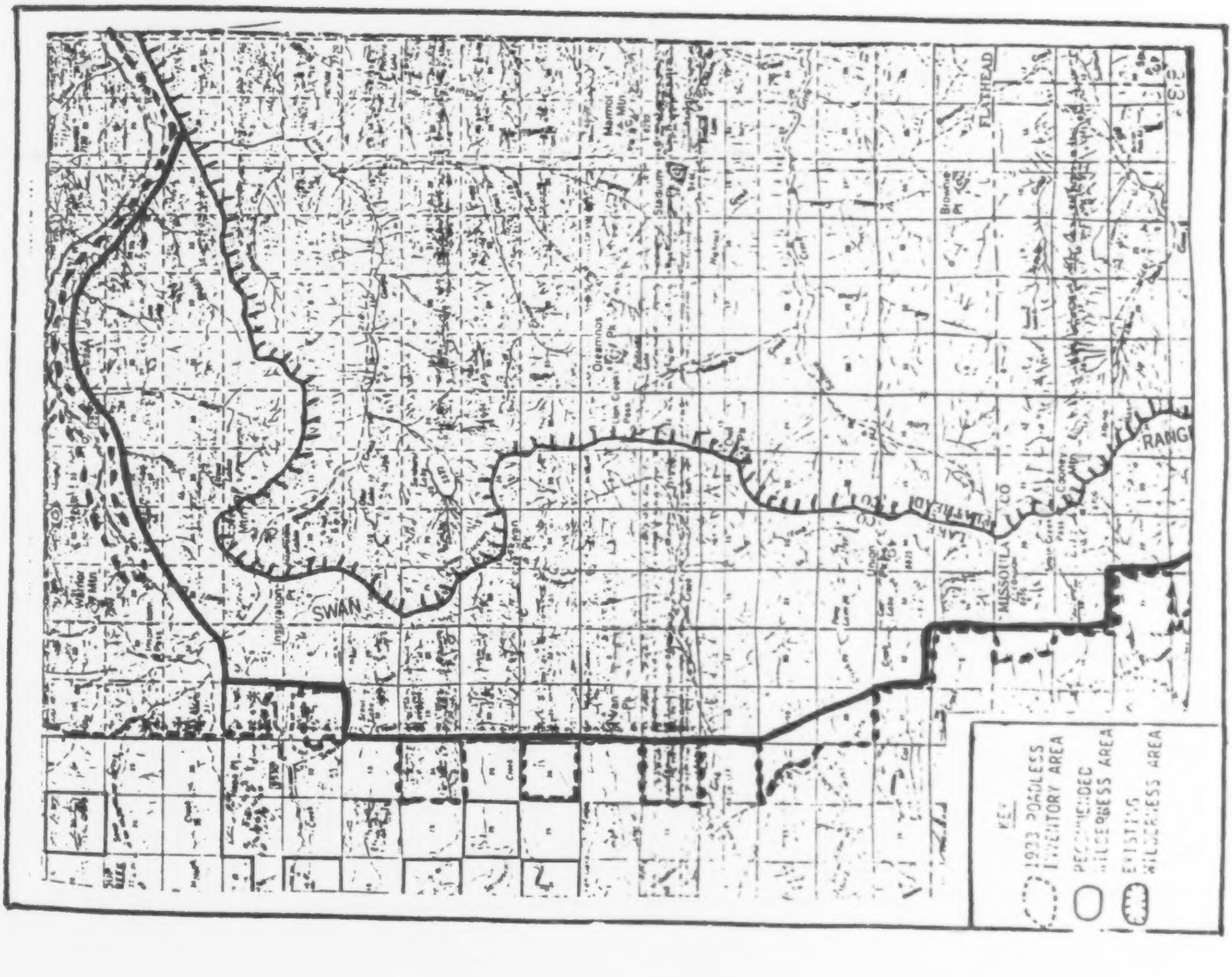
The portion of the Swan Front recommended for wilderness extends from Crescent Mountain on the south to Inspiration Point on the north, including a portion of the Bunker Creek drainage. This "west side Front" is a series of spectacular peaks and sweeping intervening saddles. The west slopes are steep with some timber. The numerous streams draining the Front originate in high, hidden alpine basins of exceptional solitude and beauty. Many of these basins are critical wildlife habitat, such as Grizzly Basin above Morrell Falls. Other key wildlife species include elk, deer, mountain goats, wolverine, fisher and trout found in the many cirque lakes.

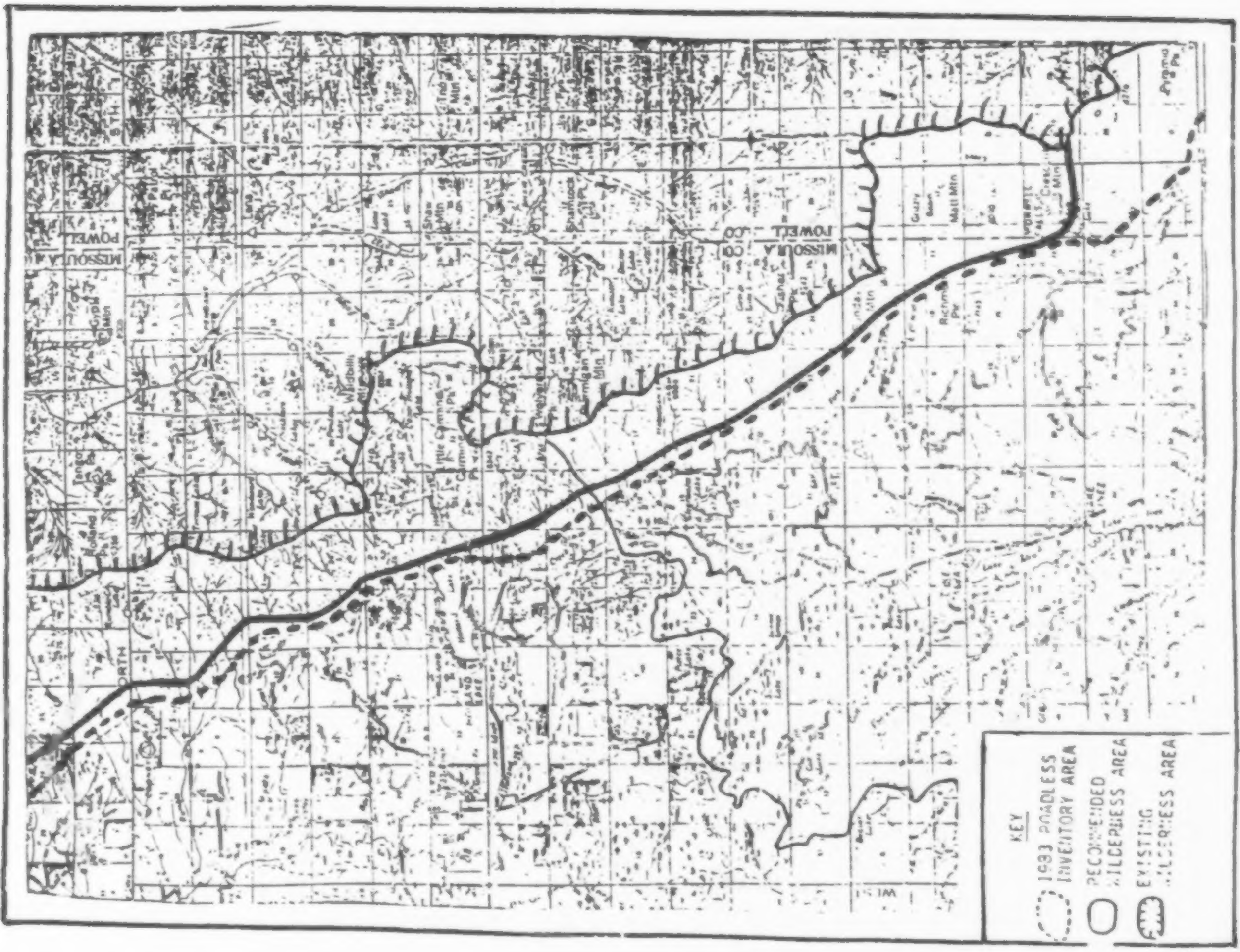
II. RESOURCE VALUES:

Timber resources are considered limited, due to site suitability criteria. On a forest-wide basis, they are not considered significant. There has been some interest in oil and gas potential and extensive leasing has occurred. The potential is not considered as good as that of the east "Front."

III. BOUNDARY RATIONALE:

The entire area has a common border with the Bob Marshall Wilderness on the east. On the west, it generally follows contour lines above existing roads. On its northern half, the western boundary pulls back to follow section lines well above existing roads to avoid including any "checkerboard" of private land. Also on the northern tip, the south slopes of the Bunker Creek drainage are included to provide needed security for wildlife resources.


KEY
1973 ROADLESS INVENTORY AREA
RECOMMENDED WILDERNESS AREA
EXISTING WILDERNESS AREA
SWAN
RANGE
FLATHEAD
FLATHEAD CO
LAKE CO
MISSOULA CO
Inspiration
Stadium
Marmot Mtn
Browne Pk
Union Pk
Oreamnos


MISSOULA
POWELL
MISSOULA CO
POWELL CO
KEY
1983 ROADLESS INVENTORY AREA
RECOMMENDED WILDERNESS AREA
EXISTING WILDERNESS AREA

MISSION ADDITION - 1 500

Forest: Flathead
1983 Roadless Area Net Acres: 960
Recommended Wilderness Acres: 960

I. WILDERNESS ATTRIBUTES:

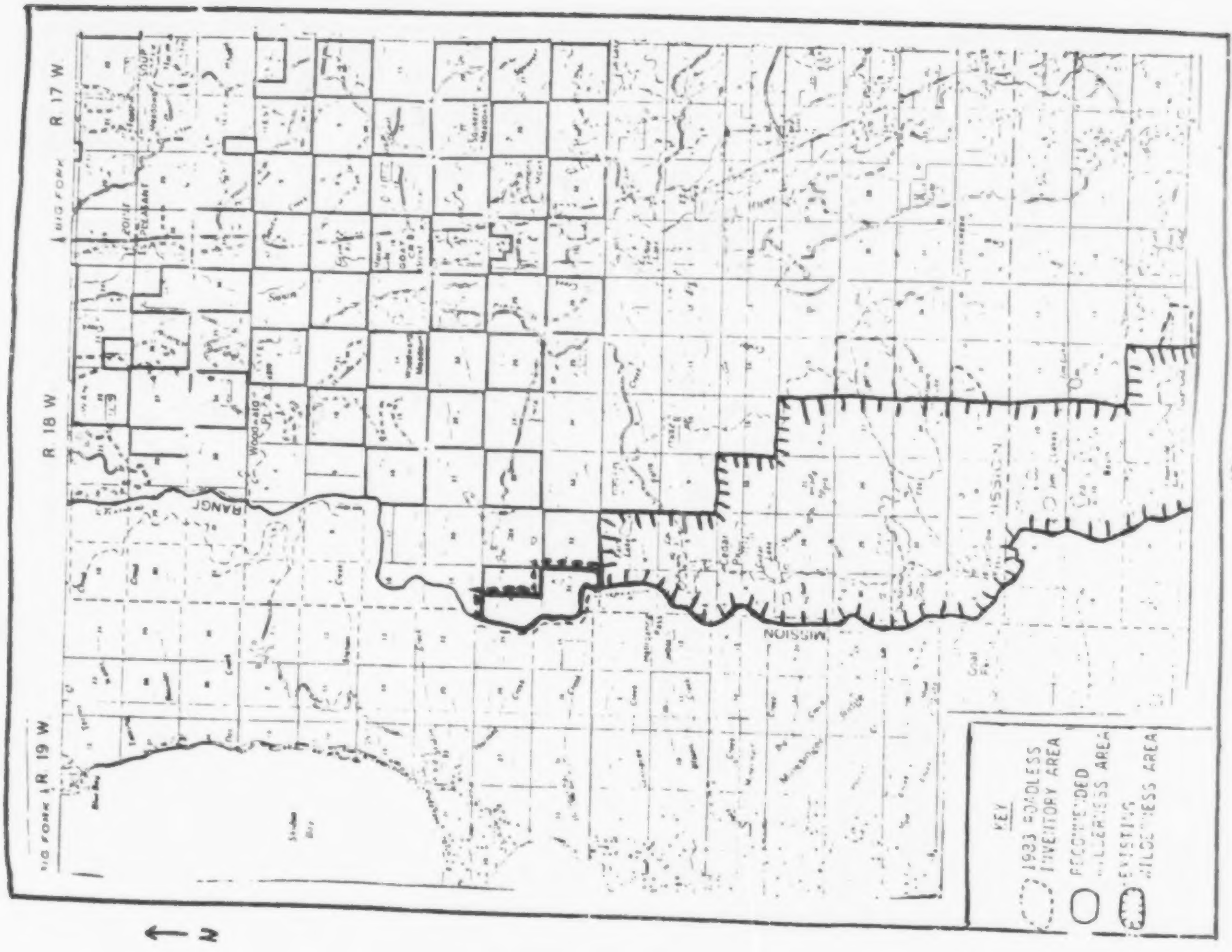
This small addition to the existing Mission Mountains Wilderness is recommended for inclusion in the wilderness system. It is a steep forested area with unnamed lakes. The steep slopes accumulate substantial rainfall - in excess of 60 inches annually, and support a western spruce-fir forest. Wildlife using the area include deer, elk and grizzly bear.

II. RESOURCE VALUES:

The timber resource is not considered to be of significance due to site limitations. Oil and gas are of interest and the area has been leased. Some seismic testing has occurred.

III. BOUNDARY RATIONALE:

This small area is bounded on the south by the northern tip of the existing Mission Mountains Wilderness. The western boundary is the Flathead Indian Reservation. It is bordered on the east by state lands.


R 17 W
BIG FORK
POINT PLEASANT
R 18 W
Woodward PL. A.
RANGE
MISSION
R 19 W
BIG FORK
KEY
1983 ROADLESS INVENTORY AREA
RECOMMENDED WILDERNESS AREA
EXISTING WILDERNESS AREA
N

C. LOCAL GOVERNMENT AND ELECTED OFFICIALS

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Himsl, Matt (State Senator)	VI-134
Lincoln County Commissioners	VI-135
Late Commenter	
Cohen, Ben (State Representative)	VI-130

B-096

AUG 11 1983

The Big Sky Country

MONTANA STATE SENATE

SENATOR BOB BROWN
SENATE DISTRICT 10
HELENA ADDRESS
CAPITOL STATION
HELENA, MONTANA 59620
PHONE (406) 449 4852
HOME ADDRESS
333 COUGAR TRAIL
WHITEFISH, MONTANA 59937
PHONE 862 6650

COMMITTEES:
EDUCATION, CHAIRMAN
JUDICIARY
TAXATION
COMMITTEE ON COMMITTEES

RECEIVED
AUG 11 1983
FLATHEAD N.F.

Whitefish, Montana
August 10, 1983

Mr. John Emerson
Supervisor, Flathead National Forest
Post Office Box 147
Kalispell, Montana 59901

Dear Mr. Emerson,

Timber has long been the keystone of western Montana's economy. In the relatively recent past we have broadened our view of the uses of forest land to recognize other values such as recreation for man and habitate for wildlife.

In the process of our new realization, however, I hope we will not lose sight of the fact that wood is nature's renewable building material. As long as far sighted practices are followed in its harvest, our forests will continue to produce timber products on a sustained basis forever.

I am advised that the allowable cut from the Flathead National Forest can easily remain at approximately the 130 million board feet level without compromising other forest values and without risk of harvesting beyond the capacity of the forest land to sustain the yield.

A programmed sell at the 100 - 103 million board feet level as is being proposed would seem unnecessarily damaging to our local economy and in addition wasteful management of the timber resource since the forests will continue their growth cycle to mortality at a rate well in excess of 100 - 103 million board feet per year, regardless of whether the timber is harvested and used.

I very much appreciate the opportunity to comment on the proposed forest management plan and hope that the plan can be revised to reflect the thoughts expressed here before it is implemented.

Sincerely,

RESPONSE

We fully agree with the first two paragraphs in Senator Brown's letter.

The Forest, however, cannot easily produce 130 MMBF of timber in Decades 1 and 2 without seriously compromising other Forest resource values. Big-game populations, scenic, and water quality values could be seriously affected. The Forest Plan's sale volume of 100 to 105 MMBF in Decade 1 is more than the local industries' 10-year average cut of 101 MMBF. The local timber industry has many problems, but the volume of timber from the Flathead National Forest is not the cause of those problems. The current level of timber volume under contract, but uncut, is at a record high of nearly 500 MMBF.

CITY OF COLUMBIA FALLS
DRAWER G
COLUMBIA FALLS, MONTANA 59912
892 4391

C-1130

RECEIVED
MAR 1 3 1985
FLATHEAD N.F.

March 11, 1985

Mr. Edgar B. Brannon, Jr.
Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, MT. 59901

Dear Mr. Brannon:

I am writing on behalf of the City Council of Columbia Falls who took official action in opposition to the proposed Flathead National Forest Plan.

We did not do this lightly. We realize you have your goals which you feel you need to accomplish. However, as the people who live and work in this valley, we have the following input:

1. THE PLAN WILL WORK NEGATIVELY WITH INDUSTRY.
2. OUR ECONOMIC CLIMATE IS SHAKY ENOUGH WITHOUT TAMPERING WITH THE TIMBER POTENTIAL. A
3. WE RECOGNIZE PLANNING IS NEEDED FOR FUTURE TIMBER PRODUCTION.
4. UNLESS A TAX BASE OF A DIFFERENT DESIGN IS IN PLACE WE LOSE TOO MUCH REVENUE FOR OUR ROAD SYSTEM. B
5. EVEN THOUGH YOU MAINTAIN THE WILDERNESS PLAN IS MERELY ROUNDING OUT WHAT CONGRESS HAS ALREADY DONE, ENOUGH HAS BEEN DONE. WILDERNESS WILL NOT PUT BREAD ON THE TABLE. IT NEVER HAS AND NEVER WILL. C

We therefore go on record as opposing your plan.

Respectfully,

M. Colleen Allison

Mayor M. Colleen Allison
and City Council

CC: The Honorable John Melcher
The Honorable Max Baucus
The Honorable Ron Marlenee
The Honorable Pat Williams

RESPONSE

A. The Forest Plan provides for an average annual harvest of 100 MMBF of scheduled timber sales plus an additional 5 MMBF of salvage sales. Thus, in the first decade we will offer approximately 105 MMBF annually in new timber sales. In addition, the current level of timber volume under contract, but not cut, is at a record high of nearly 470 MMBF. Industry generally holds approximately 300 MMBF of timber uncut and under contract as a hedge against changing market conditions. Therefore, there exists about 170 MMBF of excess volume under contract which can be cut at any time. This gives the timber industry as much as 122 MMBF annually for cutting during the first decade while leaving them with their normal 2 to 3 year supply of uncut volume under contract. Industries' average annual cut during the past decade has been only 101 MMBF.

Industry has agreed to a plan that would allow the Forest's sale offering to fluctuate annually as much as 30 MMBF, but average 100 MMBF for the decade. Timber market conditions, uncut volume under contract in excess of 300 MMBF, and industry needs would be the factors used to determine the Forest's sale offering.

B. Any change in the tax base will have to be handled through the legislative/political process.

C. We have proposed in the Forest Plan and EIS that 98,080 acres be added to the wilderness system, however, Congress will determine the final wilderness addition.

RECEIVED C-1190-L
APR 09 1985
Flat. Nat'l. Forest

DEAR MR. BRANNON,

I SUPPORT:

1. Alt. 10 because of its management philosophy, special area protection, wilderness allocation, wildlife protection and amenity value allocations. Wilderness designation should also be given to the Lost Jack, Young-Nasukoin, Mission Additions and Limestone Cave roadless areas. A

2. An ecological definition for old growth (200-400 years for most conifers) and an adequate amount and distribution by habitat type (10% per drainage). Minimum. B

3. Full riparian habitat protection for wildlife, fish and old growth with no timber harvest. C

4. No open road mileage increase. As new roads are built old ones should be closed and reseeded. A maximum road density of one mile per section should be allowed in roaded areas. D

5. No timber cutting or new roads in Noisy Face area and lands east of Swan Lake. E

6. A comprehensive monitoring program which must be funded and implemented before development can proceed. F

7. Full protection for T & E species. You must have a definitive biological decision stating no impact before a project can start or proceed. Situation 2 areas should be changed to situation 1 status. G

NAME Rep Ben Cohen -HD3

ADDRESS Box 19 Capital Station
Helena, MT. 59620

RESPONSE

Response starts on second page.

A. Alternative 10 does a good job of protecting amenity values, roadless resources, and old-growth habitat. The low Decade 1 average annual harvest (80 MMBF), however, makes this alternative unacceptable to many citizens. Alternative 10 also has one of the lowest long-term sustained yields of all alternatives considered.

The Forest Plan proposes the addition of 98,080 acres to the National Wilderness Preservation System. This is about 20 percent of the acreage reviewed for wilderness potential. Of this total, 7,239 acres are suitable for timber harvest. There is widespread public support for more wilderness as well as for maintaining a high level of timber production. Final wilderness designation decisions, however, rest with the Congress of the United States.

The Forest Plan proposes 6,295 acres in the Slippery Bill area, 31,783 acres in Jewel Basin, 54,815 acres in the Swan Front/Bunker Creek area, and 5,187 acres in the Limestone Caves area for inclusion in the National Wilderness Preservation System. Most of the North Fork wildlands are included in the Trail Creek Grizzly Bear Management Area. Lost Jack and the Mission Additions were not included in the Forest Plan's wilderness proposal.

B. We have found it more meaningful to define the conditions which describe old-growth habitat rather than to establish a fixed age at which a tree or stand could be considered "old growth". For purposes of this Plan, we have defined old-growth habitat as a community of forest vegetation which has reached a late stage of plant succession characterized by a diverse stand structure and composition along with a significant showing of decadence. The stand structure has multistoried crown heights and variable crown densities. There is a variety of tree sizes and ages ranging from small groups of seedlings and saplings to trees of large diameters exhibiting a wide range of defect and breakage both live and dead; standing and down. The time it takes for a forest stand to develop to an old-growth condition depends on many local variables such as forest type, habitat type, and climate. Natural chance events involving forces of nature such as weather, insect, disease, fire, and the actions of man also affect the rate of development of old-growth stand conditions. The amount and distribution of old-growth habitat, provided by the Forest Plan, exceeds 20 percent of the nonwilderness lands below 5,000 feet elevation. This will be sufficient to maintain adequate populations of indicator species.

C. On productive timberlands, harvesting in riparian areas may be permitted subject to the conditions set forth by Forest-wide management direction and standards established for the management area. The Flathead National Forest has designated riparian Management Areas 12 and 17 as nontimber-producing areas where riparian ecosystems are protected.

D. Miles of existing "open" roads on a year-long or seasonal basis, will generally not increase above current "open" mileage. The Forest Travel Planning Direction, Appendix C of the Forest Plan, contains categories and criteria for road closures. Open road density on nonwilderness areas projected by the Forest Plan, is approximately 1.3 miles per square mile. The Forest Plan adopted one mile per section as the maximum average open road density for geographic units within Situation 1 grizzly bear habitat.

E. We are aware of the feelings expressed by valley residents regarding management activities in the Noisy Face (Swan Front) area. In response to strong public opinion, the timber harvesting proposed in the draft documents has been revised to take into consideration the scenic and recreational importance of this area. Some visual rehabilitation of old cutting units will be attempted during the next decade.

Management direction in the Forest Plan for the Noisy Face area is to manage for this area's special recreation, visual, and wildlife resources while utilizing a portion of its timber production capabilities. Forest lands east of the town of Swan Lake are within Management Area 15, where timber management with roads is economical and feasible. Management area standards are found in Chapter III of the Forest Plan.

F. Comprehensive water quality monitoring direction was established in April of 1985. This direction establishes five priority levels; implementation of which is dependent upon budget allocations.

G. Biological evaluations of all significant projects are required when grizzly bear and gray wolf may be involved. Projects or land uses may proceed if a "No Effect" determination is made. If a "May Adversely Effect" determination results, the proposed project or land use will be modified for compatibility, eliminated, or appropriate consultation procedures will be initiated with the U.S. Fish & Wildlife Service.

We do not believe any adjustment in Management Situation 2 areas is necessary at this time. Provision has been made for future adjustments should they become necessary.

O-021

Flathead County
Board of Commissioners
800 SOUTH MAIN STREET • KALISPELL, MONTANA 59901 • (406) 755-5300

August 10, 1983

RECEIVED
AUG 1 1983
Flat. Nat'l. Forest

Mr. John L. Emerson
Forest Supervisor
Flathead National Forest
P. O. Box 147
Kalispell, Montana 59901

Re: Proposed Forest Plan

Dear Mr. Emerson:

This date we have received the enclosed letter from Charles Phillips, Maintenance Superintendent, Flathead County Road Department, with which we are in concurrence.

Thank you for your attention to our consideration.

Truly yours,

BOARD OF COUNTY COMMISSIONERS

Henry Oldenburg mg
Henry Oldenburg, Chairman

Kenneth H Krueger
Kenneth H. Krueger, Member

Melford R. Wollan, Member

mg
Enclosure

RESPONSE

Response starts on second page.

FLATHEAD COUNTY ROAD DEPARTMENT
BOX 1102
KALISPELL, MONTANA 59901
Phone 755-5300 - Ext. 353 or 354

RECEIVED
AUG 11 198
Flat. Nat'l. Forest

August 10, 1983

Board of County Commissioners
Flathead County
800 South Main
Kalispell, Montana 59901

RE: TIMBER RECEIPTS

Dear Commissioners:

The Proposed Forest Plan Alternative 8 would take 75% of the land out of production, that would be 30 million board feet per year. Any consideration in timber cut proposals will have a crucial impact on the economy of the area.

A

Timber receipts are a matter of grave concern to the Flathead County Road Department. The fact is, a lessening of these receipts would create a severe impact on the road budget.

In the road budget 24.334 mills are used to pay salaries only and less than one-half (12 mills) comes from county taxes. The salaries in terms of mill values are 24.334, but the 12 mill levy is only a little more than one-half the salary cost. All other operating costs of the road department budget have to come from other souces, over and above the 12 mills levy.

Timber receipts are crucial in the operation and maintenance of the roads in Flathead County.

B

Sincerely,

C. Phillips

Charles H. Phillips
Maintenance Superintendent

CHP:kj

RESPONSE TO FLATHEAD COUNTY COMMISSIONERS (Continued)

A. The Forest Plan emphasizes timber production on the most productive timberlands. Much of the land not suited for timber production is not biologically or economically suited for that use.

The Forest Plan provides for an average annual harvest of 100 MMBF of scheduled timber sales plus an additional 5 MMBF of salvage sales. Thus, in the first decade we will offer approximately 105 MMBF annually in new timber sales. In addition, the current level of timber volume under contract, but not cut, is at a record high of 470 MMBF. Industry generally needs approximately 300 MMBF of timber uncut and under contract as a hedge against changing market conditions. Therefore, there exists about 170 MMBF of excess volume under contract which can be cut at any time. This gives the timber industry as much as 122 MMBF annually for cutting during the first decade while leaving them with their normal 2 to 3 year supply of uncut volume under contract. Industries' average annual cut during the past decade has been only 101 MMBF.

Over the next 5 decades, volume sold will increase dramatically to 152 MMBF annually. This should enhance timber industry expansion potential.

B. The Forest Plan estimates that the Forest Service's "25 Percent Fund", which is in lieu of property tax payments and ear-marked for road and school use, will remain at the current level for 10 years, then increase substantially over the next 4 decades. We are well aware of the County's need for "25 Percent Fund" receipts and will strive to maintain that income to the County.

The Big Sky Country

MONTANA STATE SENATE

H-1139

February 21, 1985

Mr. Edgar Brannon
Forest Supervisor
Flathead National Forest
P. O. Box 147
Kalispell, MT 59901

RECEIVED
FEB 22 198
Flat. Nat'l. For.

Dear Mr. Brannon:

The decision on the amount of annual allowable cut certainly belongs to your professional staff who are charged with managing this renewable resource. A

The allocation of the use of the land-base to wilderness, roadless recreation, and grizzly bear reserves is a matter of public concern and with Glacier Park, the Flathead National Forest Wilderness plus adjoining wilderness totalling about 2.8 million acres or about 4344 square miles is certainly enough set-aside. Those resources should serve people with a dedicated use but surely there is a limit to the acreage you withdraw from productive use. B

The priority your reported plan gives the grizzly bear is beyond comprehension and common sense. I can't believe that you plan - and I quote - declares as a policy: "Grizzly-human conflicts will be rendered in favor of grizzlies unless the bear involved is determined to be a nuisance." What kind of logic is that!

I respectfully urge a reconsideration of this issue with a redetermination of values and perspective with a primacy given the needs of man. C

Yours truly,

Matt Himsl

MATT HIMSL, Senator
District #3

MH:lf

cc: Senator Melcher, Senator Baucus, Rep. Marlenee,
Rep. Pat Williams

RESPONSE

A. The determination of annual allowable cut is made after considering biological and physical limitations of the land; current economic projections; and local, regional, and National social needs. Social needs include considerations of priced benefits such as timber production, employment, and community stability. Also considered are nonpriced benefits such as nongame wildlife, clean air and water, scenic beauty, etc. All of these considerations are included in multiple-use forest management which will produce the greatest net public benefit.

B. Management of land for wilderness, roadless recreation, or grizzly bear habitat is in response to public concerns and land capabilities. We have proposed to manage as much land as practical for timber harvest, considering all other resource needs.

C. The grizzly bear is managed under the broad Congressional direction found in the Endangered Species Act of 1973. The Act requires that all Federal projects, including National Forest management activities, must not adversely affect the grizzly bear or its habitat; and must strive to reach a recovered population. The Flathead National Forest has more grizzly bears and better habitat than any other National Forest in the continental United States. We feel that good grizzly bear management can co-exist with good timber management. Providing for grizzly bear security is perhaps the key grizzly habitat need that must be coordinated with other resource activities. While large portions of the Flathead National Forest are classified as grizzly bear Management Situation 1, where the bear is a primary resource for management, that doesn't mean the exclusion of other resource management options. Both grizzly bears and timber will continue to be important resources produced on the Flathead National Forest.

L-1104

BOARD OF COUNTY COMMISSIONERS

LINCOLN COUNTY
STATE OF MONTANA

DISTRICT NO. 1, LIBBY
JIM R. MOREY

DISTRICT NO. 2, TROY
R. W. LINDSEY

DISTRICT NO. 3, EUREKA
NOEL E. WILLIAMS

CLERK OF THE BOARD AND COUNTY RECORDER, JANET B. F. SIEGEL
512 CALIFORNIA AVENUE
LIBBY, MONTANA 59923

March 6, 1985

RECEIVED
MAR 07 1985
FLATHEAD N.F.

Edgar B. Brennan, Jr.
Flathead National Forest
Box 147
Kalispell, Montana 59901

Dear Mr. Brennan:

We in Lincoln County have been informed that the proposed Flathead Forest Plan includes a 25% reduction in annual timber harvest. Please consider this a protest of that proposal.

Lincoln County depends primarily on timber-based industries for employment and economic survival; furthermore, these timber-based industries in our county depend, for the most part, on the resource provided by the Kootenai National Forest. Any reduction in the Flathead National Forest timber base would create a disproportionate demand for the timber available in the Kootenai National Forest and would lead subsequently to increased unemployment.

Lincoln County, historically, has one of the highest unemployment rates in the state and our efforts to combat this situation would be in vain if your proposal were implemented, causing a rush for Kootenai timber by the Flathead timber industry.

Yours very truly,

BOARD OF LINCOLN COUNTY COMMISSIONERS

R. W. Lindsey, Chairman

Noel E. Williams, Member

Jim R. Morey, Member

js

RESPONSE

The much discussed 25 percent reduction in timber harvest lands is more mythical than real.

The Forest Plan provides for an average annual harvest of 100 MMBF of scheduled timber sales plus an additional 5 MMBF of salvage. Thus, in the first decade we will offer approximately 105 MMBF annually in new timber sales. In addition, the current level of timber volume under contract, but not cut, is at a record high of 470 MMBF. Industry generally needs approximately 300 MMBF of timber uncut and under contract as a hedge against changing market conditions. Therefore, there exists about 170 MMBF of excess volume under contract which can be cut at any time. This gives the timber industry as much as 122 MMBF annually for cutting during the first decade while leaving them with their normal 2-3 year supply of uncut volume under contract. Industry's average annual cut during the past decade has been only 101 MMBF.

While our local timber industry has undergone major problems over the past 5 years, these problems are not caused by the flow of timber products from the Flathead National Forest.

Over the next 5 decades, volume sold will increase dramatically to 152 MMBF annually. This should enhance timber industry expansion potential.

D. EDUCATORS

	Comments and Responses On Page
Flathead School District #5	VI-137
Flathead School District #6	VI-139
San Francisco State University	VI-141
University of Montana (two letters)	VI-142
University of Montana (Biological Station)	VI-151

A-002

KEITH L. ALLRED
Superintendent
KEN SIDERIUS
Asst. Superintendent

TOM TRUMBULL
Business Manager
GARY ROSE
Administrative Asst.

SCHOOL DISTRICT NO. 5
Phone 755-5015 · 233 1st AVE. EAST · KALISPELL, MONTANA 59901

FLATHEAD HIGH SCHOOL
KALISPELL JUNIOR HIGH
LINDERMAN SCHOOL
ELROD SCHOOL
RUSSELL SCHOOL
PETERSON SCHOOL
HEDGES SCHOOL
EDGERTON SCHOOL

RECEIVED
MAY 26 1983
FLATHEAD N.F.

May 24, 1983

Mr. John L. Emerson, Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

Dear Mr. Emerson:

Although I have not been part of the request for input on the proposed Flathead National Forest Management Plan, general contents of the plan came to my attention today. I will comment on one area only.

I am deeply concerned by the apparent control on the annual cut and the potential loss of school funds. Our County is significantly impacted by federal forest which in turn restricts the amount of property subject to property tax. Restricting the little we have received from the Forest Reserve Fund alarms me as an educator. Not too much seems to be happening or seems to be on the "planning board" to replace these ever disappearing funding sources. I urge those responsible for adopting plans having financial input on public schools to introduce funding source(s) to replace losses.

Thank you for listening.

Sincerely yours,

Keith L. Allred
Superintendent

KLA/ph

RESPONSE

See response on Flathead School District 5's 01/23/85 letter.

F-1036

BILL COOPER
Superintendent
KEN SIDERIUS
Asst. Superintendent

TOM TRUMBULL
Business Manager
GARY ROSE
Administrative Asst

SCHOOL DISTRICT NO. 5
PHONE 755 5015 · 233 1ST AVE. EAST · KALISPELL, MONTANA 59901

January 23, 1985

RECEIVE
JAN
FLATHEAD NF

Edgar B. Brannon, Jr.
Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

Dear Mr. Brannon:

The Board of Trustees of School District #5 realize that our collective lack of technological expertise in the area of land management is a limiting factor to be considered as we respond to your call for an opinion on the proposed forest plan.

The school board must represent the interests of the taxpayer in assuring an equal distribution of the tax burden at the same time promoting the enlargement of the tax base. Such an assignment sometimes is in direct opposition to the necessity of passing on to our kids and to succeeding generations as much of our enrivonmental heritage as is humanly possible.

We feel that the plan should ultimately strike a balance between our communities economic needs and its traditional desire to maintain an environment that takes advantage of the natural beauty of the area.

Sincerely,

WMCo

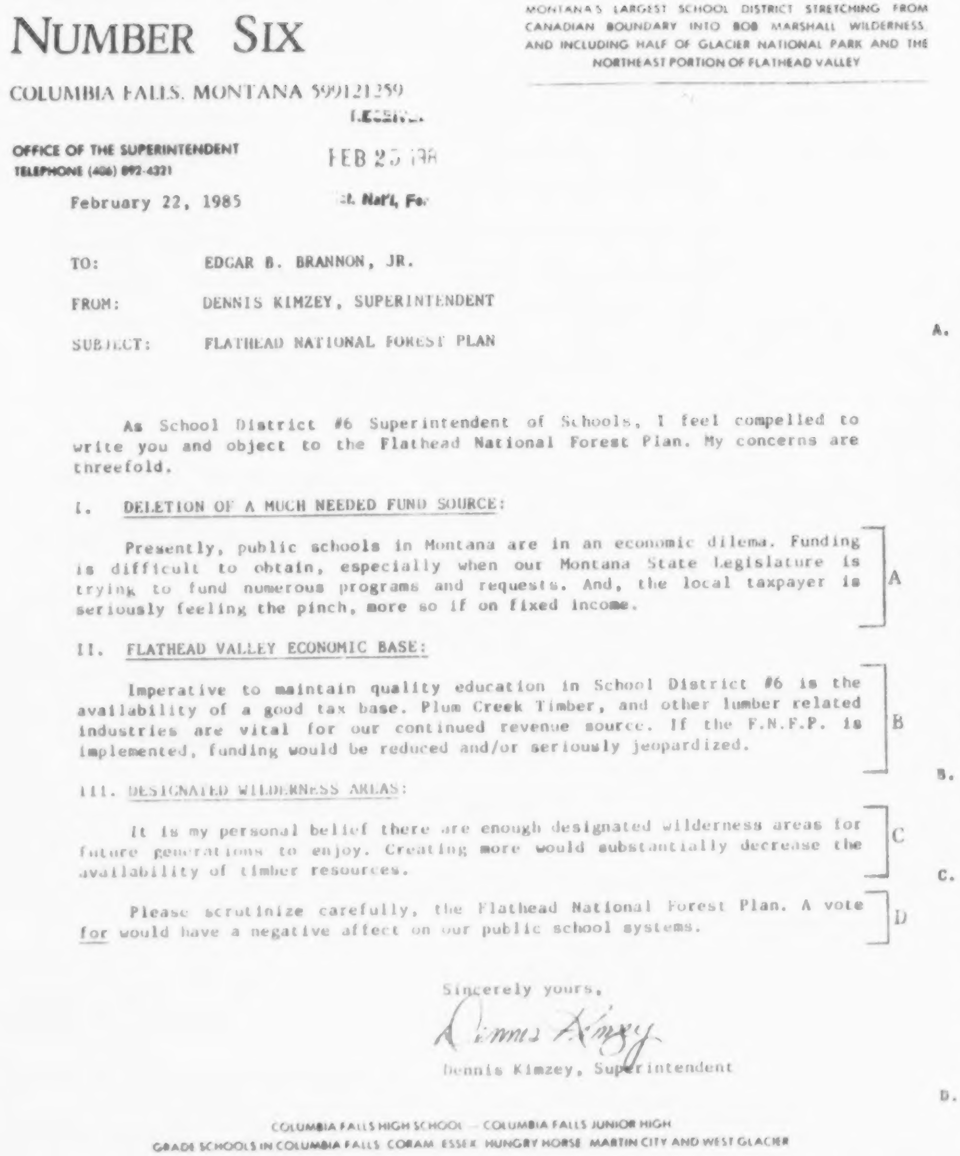
William M. Cooper
Superintendent

WMC/ph

cc: Senator John Melcher
Senator Max Baucus
Representative Ron Marlenee
Representative Pat Williams

RESPONSE

We believe Alternative 17 in the Forest Plan strikes a balance between current economic needs and long-term enviromental needs. The proposed first decade timber sell target of 100 to 105 MMBF per year is more than the timber industry has harvested per year over the past decade. Therefore, we project no decrease in receipts to the county for Decade 1, with significant increases of receipts for subsequent decades. The timber industry also is holding an unprecedented volume of uncut timber under contract. When this backlog is cut, receipts to the County will increase significantly.



NUMBER SIX

COLUMBIA FALLS, MONTANA 59912-1259

OFFICE OF THE SUPERINTENDENT
TELEPHONE (406) 892-4321

MONTANA'S LARGEST SCHOOL DISTRICT STRETCHING FROM CANADIAN BOUNDARY INTO BOB MARSHALL WILDERNESS AND INCLUDING HALF OF GLACIER NATIONAL PARK AND THE NORTHEAST PORTION OF FLATHEAD VALLEY

RECEIVED
FEB 25 198
[illegible] Nat'l. For

February 22, 1985

TO: EDGAR B. BRANNON, JR.

FROM: DENNIS KIMZEY, SUPERINTENDENT

SUBJECT: FLATHEAD NATIONAL FOREST PLAN

As School District #6 Superintendent of Schools, I feel compelled to write you and object to the Flathead National Forest Plan. My concerns are threefold.

I. DELETION OF A MUCH NEEDED FUND SOURCE:

Presently, public schools in Montana are in an economic dilema. Funding is difficult to obtain, especially when our Montana State Legislature is trying to fund numerous programs and requests. And, the local taxpayer is seriously feeling the pinch, more so if on fixed income. A

II. FLATHEAD VALLEY ECONOMIC BASE:

Imperative to maintain quality education in School District #6 is the availability of a good tax base. Plum Creek Timber, and other lumber related industries are vital for our continued revenue source. If the F.N.F.P. is implemented, funding would be reduced and/or seriously jeopardized. B

III. DESIGNATED WILDERNESS AREAS:

It is my personal belief there are enough designated wilderness areas for future generations to enjoy. Creating more would substantially decrease the availability of timber resources. C

Please scrutinize carefully, the Flathead National Forest Plan. A vote for would have a negative affect on our public school systems. D

Sincerely yours,

Dennis Kimzey

Dennis Kimzey, Superintendent

COLUMBIA FALLS HIGH SCHOOL — COLUMBIA FALLS JUNIOR HIGH
GRADE SCHOOLS IN COLUMBIA FALLS, CORAM, ESSEX, HUNGRY HORSE, MARTIN CITY AND WEST GLACIER

RESPONSE

A. Guidance provided by the Forest Plan establishes an average annual harvest of 100 MMBF of scheduled timber sales plus an additional 5 MMBF of salvage; thus, in the first decade we will offer approximately 105 MMBF annually in new sales. In addition, the current level of timber volume under contract, but not cut, is at a record high of 470 MMBF. Industry generally needs 300 MMBF of timber uncut and under contract as a hedge against changing market conditions; therefore, there exists about 170 MMBF of excess volume under contract which can be cut at any time. This gives the timber industry 122 MMBF annually for cutting during the first decade while leaving them with their normal 2- to 3-year supply of uncut volume under contract. Industry's average annual cut during the past decade has been 101 MMBF.

Over the next 5 decades, scheduled volume available for sale will increase dramatically to over 150 MMBF annually. This should enhance timber industry expansion potential. As a result, the Forest Service's "25 Percent Fund", which is an in-lieu of property tax payment, is predicted to increase over the next 5 decades.

B. We believe, with an increasing volume available for sale, the dollar return to the County for roads and schools will increase. Implementation of the Forest Plan will not reduce or jeopardize funding.

C. The Forest Plan proposes the addition of 98,080 acres to the National Wilderness Preservation System. This is about 20 percent of the acreage reviewed for wilderness potential. Of this total, approximately 7,000 acres are suitable for timber harvest. The geographic location of these acres makes them virtually unavailable for economic harvest. We recognize that there is widespread public support for more wilderness as well as for maintaining a high level of timber production. Final wilderness designation decisions, however, rest with the Congress of the United States.

D. Implementation of the Forest Plan would likely have a positive effect on the public school system. Revenues to the County will increase and industry can plan on an increasing supply of raw materials from the Forest.

F-1056

SCHOOL DISTRICT
NUMBER SIX

COLUMBIA FALLS, MONTANA 59912-1259

MONTANA'S LARGEST SCHOOL DISTRICT STRETCHING FROM CANADIAN BOUNDARY INTO BOB MARSHALL WILDERNESS, AND INCLUDING HALF OF GLACIER NATIONAL PARK AND THE NORTHEAST PORTION OF FLATHEAD VALLEY

OFFICE OF THE SUPERINTENDENT
TELEPHONE (406) 892-4321

March 11, 1985

RECEIVED
MAR 14 1985
Flat. Nat'l. Forest

TO: EDGAR B. BRANNON, JR., FLATHEAD SUPERVISOR

FROM: SCHOOL DISTRICT #6 BOARD OF TRUSTEES

SUBJECT: FLATHEAD NATIONAL FOREST PLAN.

The School District #6 Board of Trustees would like to go on record as opposing any portion of the Flathead National Forest Plan that would result in the reduction or deletion of needed school revenue. A

Our school system recognizes the fact a large part of our economic base is timber related, and cannot support a proposal whereby these monies would not be partially or fully generated. B

To reaffirm our position, The School District #6 Board of Trustees opposes that portion of the Flathead National Forest Plan that would result in the depletion of monies generated toward our school system. A

Sincerely yours,

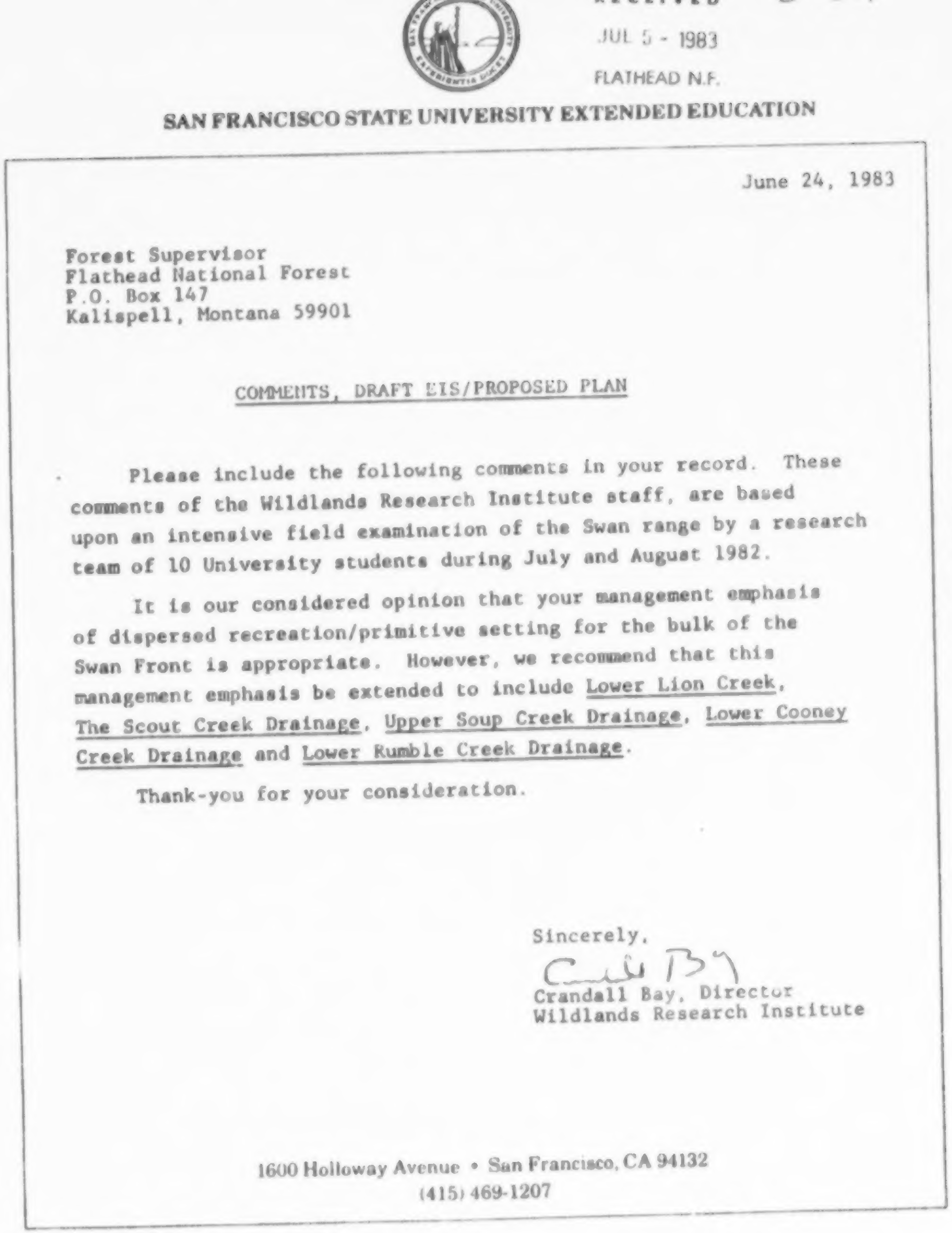
BOARD OF TRUSTEES, SCHOOL DISTRICT #6

ANN M. ALLEN, CHAIRMAN — Ann Marie Allen
STAN MC ALLISTER, V.C. — Stan McAllister
RON LOVEALL — Ron Loveall
JUDY WINDAUER
HOWARD HUNTER
MARION HOLDEN — Marion Holden
PHIL IVERSEN

COLUMBIA FALLS HIGH SCHOOL — COLUMBIA FALLS JUNIOR HIGH
GRADE SCHOOLS IN COLUMBIA FALLS, CORAM, ESSEX, HUNGRY HORSE, MARTIN CITY AND WEST GLACIER

RESPONSE

See response for Flathead School District 6's 2/22/85 letter.



JUL 5 - 1983
FLATHEAD N.F.

SAN FRANCISCO STATE UNIVERSITY EXTENDED EDUCATION

June 24, 1983

Forest Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, Montana 59901

COMMENTS, DRAFT EIS/PROPOSED PLAN

Please include the following comments in your record. These comments of the Wildlands Research Institute staff, are based upon an intensive field examination of the Swan range by a research team of 10 University students during July and August 1982.

It is our considered opinion that your management emphasis of dispersed recreation/primitive setting for the bulk of the Swan Front is appropriate. However, we recommend that this management emphasis be extended to include Lower Lion Creek, The Scout Creek Drainage, Upper Soup Creek Drainage, Lower Cooney Creek Drainage and Lower Rumble Creek Drainage.

Thank-you for your consideration.

Sincerely,

Crandall Bay, Director
Wildlands Research Institute

1600 Holloway Avenue • San Francisco, CA 94132
(415) 469-1207

RESPONSE

In our EIS and Forest Plan, the upper portion of all these drainages is included in a proposed addition to the Bob Marshall Wilderness which extends from our southern boundary (south of Holland Lake) north to the Bunker Creek area, an area of approximately 34,800 acres. The Forest manages lands for multiple uses and therefore feels it is more appropriate to manage the lower portion of these drainages for uses other than dispersed recreation.

J-001
RECEIVED
MAY 18 1983
FLATHEAD N.F.

University of Montana
Missoula, Montana 59812

School of Forestry
(243-2253)

May 16, 1983

Mr. John Emerson, Supervisor
Flathead National Forest
P.O. Box 147
Kalispell, MT 59901

Dear John:

This letter is my preliminary view of the FNF Plan and Draft EIS; it is designed only to cover several general and grizzly bear-related topics, as requested by Sue Giannettino and Bob Hensler (regarding a meeting with them held on May 11).

Overall, I think that the plan has tried to meet many concerns of the public, industry, and the USFS. I am, on the one hand, pleased to see your emphasis on the grizzly, and recognition of the growing recreational role of FNF. The FNF does house most of the grizzly bears south of Canada, and you've done well to give them a high profile in the Plan.

On the other hand, regarding my letter to you dated September 23, 1980, A
I don't see (1) where you have fully recognized FNF's key role in wolf
recovery--because of the bordering with B.C., GNP, and (essentially),
Alberta, FNF is the only area west of Minnesota where natural wolf B
recovery may occur; (2) recognition of FNF's "absolutely crucial" role
in maintaining and enhancing GNP (and its role as a world biosphere
reserve); and (3) recognition of the special FNF relationship with the
B.C. Forest Service and Canada regarding co-operative planning, coor- C
dinated mitigation, and "international projects" (e.g., whenever their
chain is rattled about Cabin Creek, Canadians say, "why don't you look
at how you've developed _your_ side").

In that 1980 letter, I also stressed that (1) throughout the Plan, FNF D
should recognize its extremely low potential for long-term timber
production (e.g., slow tree growth potential); (2) the existing E
enormous FNF commitment to wilderness (+ 40% of FNF), which gives FNF
a special status; (3) the Plan should make a strong bid for research F
where the data base is lacking (and should _defer_ decisions when such
data are not available); (4) the Plan should coordinate closely with G
adjacent county, state, and Indian programs and planning; and (5) the
Plan should not stress artificial recreation developments (snowmobile H
trails, etc.).

RESPONSE

A. When the planning process began, there were no gray wolves verified. In April of 1979, however, a lone female was trapped. Since then, two litters have been verified by the Wolf Ecology Project. There may now be a minimum of 20 gray wolves that are at least part-time residents of the Glacier View Ranger District. The Forest Plan has been completely revamped to provide what we consider adequate direction for the protection and recovery of the gray wolf population.

B. The Forest Plan recognizes the geographic relationship to Glacier National Park. Resources will be managed in a way that continues to recognize this close relationship. The National Forest, however, is not a National Park and the laws and regulations under which each is managed are different. It is not the purpose of a National Forest to provide a "protective blanket" for the National Parks.

C. The relationship of managing resources on the Glacier View Ranger District and in Canada has been expanded in the Forest Plan, particularly as it relates to water quality. Water quality monitoring will be emphasized in several of the major streams, namely Big Creek and Coal Creek. Also, major efforts have been made to coordinate with other agencies. A Forest hydrologist is now a member of the IJC (International Joint Commission) subcommittee on water quality monitoring, and a fisheries biologist has been assigned full time responsibility to develop a sediment/bull trout response model specific to the North Fork.

D. The timber inventory data used in this Forest planning process is comprised of those lands growing at least 20 cubic feet of wood fibre per acre per year. About 835,747 acres or 36 percent of the Flathead National Forest are tentatively suitable for producing commercial timber. Of these tentatively suitable Forest acres, 76 percent have the potential to produce over 85 cubic feet per acre per year. Twenty-three percent could produce between 50 and 85 cubic feet and 1 percent could produce between 20 and 50 cubic feet.

E. The amount of wilderness designated is a political decision, not a land management decision.

F. The Forest Plan gives greater emphasis to research needs, particularly in the area of threatened and endangered species.

G. We are constantly coordinating with County, State, and Indian Tribe programs during our planning and management processes.

H. The Forest Plan attempts to provide for all legitimate activities on National Forest System lands. Snowmobiling is a recognized use, where it can be accomplished in a compatible manner with other resources and uses. Areas of incompatibility are elk and deer winter habitat or grizzly bear denning areas during the late

Mr. John Emerson, Supervisor
Flathead National Forest
Page 2
May 16, 1983

As I see the FNF Draft Plan, it really emphasizes recreation, it pushes hard for important game species and wilderness, it tries some to meet the needs of the grizzlies, but it does not show a strong commitment to enhancing and protecting GNP and the wolf, or to coordinating with British Columbia and Canada; coordinating with county/private, state, and Indian ownerships and programs; or to promoting research. It also does not adequately recognize the overall, low timber producing potential of FNF. I

In my view, those above items should all be recognized in the opening statements (goals and objectives) of the Plan, e.g., they should be added to the opening paragraph, p. II-1, to clearly identify the FNF as a very unique forest. They should be repeated where appropriate throughout the Plan and Draft EIS, to ensure clarity. J

Sue and Bob indicated that despite FNF's great efforts to adequately treat the grizzly and grizzly habitat, that complaints were being voiced by the public regarding the grizzly being "sold short." I think that this is happening for several reasons:

1. P. II-1, #4: "Work toward" is not a very strong way to approach grizzly recovery. Why not say "4. Recover the grizzly population and its habitat as per the Grizzly Bear Recovery Plan." Also, where is the eagle and wolf under forest goals? K

2. P. II-3 Wildlife Fish: This indicates that deer and elk will be given a great amount of attention on all ranger districts wherever elk and deer occur, but that grizzly bears will be given attention only in areas studied by BGP. This section should note that there are other very important grizzly areas (complexes) on FNF which are as yet unstudied, but which will also get attention (e.g., Smokey Divide, the Swan bottoms, Babtiste Creek area, Spotted Bear, Coram to West Glacier, etc.) This section should also note that other species will be tended to as appropriate. I know that the Plan intends to cover those topics, too, but it should be restated here and elsewhere, if you are to build and maintain public confidence in the Plan. L

3. P. II-6. The list of research needs is woefully inadequate, even at this early stage. Just in relation to the grizzly, other obvious needs are: (1) How do you improve grizzly habitat? (2) Where are the important travel corridors and how are they to be protected? (3) Where are the high density grizzly areas; the problem areas; the important feeding and denning areas; etc.? (4) What is the basic growth, distribution, and productivity information on key grizzly plant foods? and (5) How and how fast do (can) grizzlies adapt to habitat changes? Without recognizing F

RESPONSE TO UNIVERSITY OF MONTANA (Continued)

I. Additional direction for the management of grizzly bears and gray wolves has been added to the Forest Plan. Many people commented that the Draft Plan was too heavily weighted toward grizzly bears and gray wolves.

J. The Forest Plan will contain a minimum statement that places the resources of the Forest in perspective with the issues and concerns presented to the Planning Team by the various publics.

K. Wording has been changed in the Forest Plan.

L. All acres of the Flathead National Forest within occupied grizzly bear habitat have management direction to provide for the recovery of the grizzly bear. This direction should be clearer in the Forest Plan. We have also initiated a project of grizzly bear habitat component mapping on the Forest. When this is completed, we will have better data on which to base grizzly bear habitat management.

and noting such research needs, subsequent statements of managing FNF for the grizzly and grizzly recovery sound hollow. Give specific examples of FNF's intent throughout the Plan and Draft EIS; repeat them; remember that the public is suspicious of the F.S. because of past occurrences, and because no one knows who may be running FNF next. F

4. The lack of "being specific," where important topics are covered, leaves the reader confused. For example, reference to the various F.S. manuals, handbooks, codes, guidelines, etc., means nothing to the average citizen - try to tie in a specific example of what the manual, guideline, etc. does (means). On page II-9, for instance, I can't tell from items 9 and 10 whether or not outfitters are given rules to reduce bear/man conflicts; on page IV-138 you state that you will improve grizzly habitat with scheduled cuts, but we do not yet know how to do that (and on page II-6, you don't list learning how to improve grizzly habitat as a research need); on pages IV-138, 139, 141, 145, etc., you have changed the status of the Nasoukoin wildlife area without a comment - a footnote would help; on pages IV-146, 149, 151, 153, 156, and 157 you do not recognize the importance of the Smokey Divide (a) for grizzlies, or (b) its important grizzly role in relation to Apgar Ridge; and on pages IV-111, 113, 114, and 115 I see no strong recognition of the importance of the Coran/West Glacier travel corridor. It wouldn't take much extra space to re-state FNF's intention to tend to these things. M

5. The grizzly population estimates, pages VI-16 and 17, are at best wild guesses, and should be clearly identified. These numbers will be mis-used countless ways, for both good and bad reasons. I know that all you need is a goal in numbers, and that it can be entirely out of the blue, for you to build a plan. However, if you do not clearly explain the nebulous nature of the numbers, they will, ultimately, cause harm to grizzly management. N

No matter what management option is finally chosen for the Plan, no matter which option you favor, it would build confidence in the reader tremendously if you would clearly indicate throughout the Plan and EIS that you recognize your role as stewards of a very unique and special national forest. I'd say that is what it lacks now. Neither the pro-developer or the conservationist knows where you stand at the present, nor is it clear that FNF staff recognizes the uniqueness of FNF. O

RESPONSE TO UNIVERSITY OF MONTANA (Continued)

M. The Nasukoin Wildlife Area was changed to a dispersed recreation emphasis in the Draft Forest Plan to attain the desired level of dispersed recreation emphasis. Because of public concern, it has been changed back to grizzly bear emphasis in the Forest Plan.

N. You are correct that the population estimates are our best professional judgement based on the knowledge of our biologists. The estimates are consistent with those presented in the State of Montana EIS on grizzly bear management. Both estimates have been extrapolated from research data provided by the Border Grizzly Project.

O. In total, most of the concerns you have expressed relative to management of the resources of the Flathead National Forest have been adequately provided for in the Forest Plan.

I will add other, more specific comments on the Plan and Draft EIS as soon as possible. I am in terrible straits financially, on the Project, and cannot provide the input I should offer, but I'll do my best.

Respectfully,

Charles Jonkel, Director
Border Grizzly Project

co
cc: Hensler
FWP

University
of Montana
Missoula, Montana 59812
School of Forestry

U-1005

March 12, 1985

RECEIVED
MAR 14 1985
FLATHEAD N.F.

Edgar B. Brannon, Jr.
Forest Supervisor
Flathead National Forest
Box 147
Kalispell, MT 59901

Dear Mr. Brannon:

Although I submitted comments on the Flathead Forest Plan prior to your issuance of the supplement, I want to provide some final comments on old-growth management because in my view that element of the plan stands out, more than any other, as being in need of extensive revision and expansion. The references to old growth are difficult to locate in the plan and many of the premises upon which conclusions are based are either obscure or unexplained. Stating that 10-16 pairs of pileated woodpeckers will be supported on each ranger district does not create a reality. Whatever good intensions may have been involved, your definition of old growth is misleading and distribution is not addressed in any definitive way.

My initial concern is that no specific old-growth management guidelines have been described in the forest plan. Informal documents that have been prepared by the Flathead have not been circulated to the public unless specifically requested. The Idaho Panhandle Forest has a detailed and thoughtful evaluation of old growth. The Kootenai has an old-growth plan with at least some detail that represents a substantial effort to identify old-growth needs. Where is the Flathead's old-growth plan? I do not consider a xerox of "Evaluation of Alternatives Effect on Old Growth" to be a satisfactory substitute for an old-growth plan. Old growth is, in practical terms, a non-renewable resource. I see no accommodation in the forest plan for true old growth, those stands that currently have components of 300, 400, or 500 years-old and older. These old stands should be viewed as unique resources instead of being treated as a dispensible part of current forest diversity.

In this letter I offer some specific comments and I urge you to prepare and circulate an old-growth management plan for the Flathead before finalizing the basic forest plan.

RESPONSE

Responses starts on second page.

Edgar B. Brannon, Jr.
March 12, 1985
Page two

1. Inventory

It is impossible to evaluate current and projected old-growth status under various alternatives without a specific inventory of existing old-growth stands (location, extent, age of components, stand structure, etc.). Does such an inventory exist? If so, that is not evident in the plan. If not, it is not responsible to proceed until one is completed. Classifying stands by age alone does not give any realistic picture of existing old growth.

2. Definition of Old Growth

The term old growth relates ecologically to structure and function rather than simply to age. Age should not be the most important, and certainly not the only criterion; if age is to be one of the criteria, it at least ought to be selected realistically. In forests of western larch/Douglas-fir on the Flathead National Forest, characteristics that qualify a stand as old growth usually are not present at a minimum level until there is a component of 200 year-old trees. Setting the minimum age at 150 years (p. IV-36 implies that 120 years is sufficient!) produces a gross overestimate (240,000 acres below 5,000 ft., p. III-18) of the amount of old growth now present on the forest. It also produces a very great overestimate (64,000 acres, p. III-18) of what will remain in the future, because the oldest stands probably will be cut (I find nothing in the plan to allay this concern).

Although 20 inch dbh larch could be grown on some sites in 150 years, heartwood decay, numerous logs and snags, and other structural components of true old growth usually would be insufficiently represented to qualify the stand as old growth. A stand of 20 inch larch, 150 years old, would be only of minimal support for many old-growth associated wildlife. Lumping all ages of old growth together with a minimum of 120-150 years not only sets the lower limit at an unrealistically young age, it fails to recognize the major ecological differences in various ages of old growth (see Juday 1978). Although 200 year-old larch/Douglas-fir may be classified as minimum old growth, stands with tree components that are 300 years old and older may be much more valuable as habitat for cavity-nesting wildlife and many other guilds and species. I see no indication in the forest plan that these very old components have been identified as important. Even in designated old-growth stands it appears that harvesting could take place well before the stand reaches the older ages now common on the Flathead. The uniqueness of these old stands has not been investigated in any systematic manner in the northern Rockies. Pileated woodpeckers are important, but certainly they are not the only old-growth species of concern. What consideration has been given to amphibians, for example? (See Bury 1983).

Old growth is not a precise assemblage of specific components. Old growth represents a continuum in relation to age, structure and function. We need to recognize the diversity within old growth and to perpetuate stands with old/old growth as well as those barely qualifying. That is an essential part of forest habitat diversity.

A

RESPONSE TO UNIVERSITY OF MONTANA (continued)

A. Providing old growth, as directed by the National Forest Management Act and the ensuing regulations, was one of the most difficult areas to deal with during the planning process. Old growth means different things to various groups and individuals, and the act did not clearly define it for us. An old-growth western larch/Douglas-fir plant community at 500+ age provides a vastly different habitat from a 500+ age grand fir plant community. One provides a superior habitat for pileated woodpeckers and indicator species, while the other provides a very good habitat for goshawks, another species of importance. Interestingly, the very best representative larch/Douglas-fir plant communities have developed on habitat types that will eventually develop into grand fir climax communities. Without intervention, either natural or man-caused, these plant communities will develop to grand fir or subalpine fir communities at climax and provide habitat for those vertibrate species that do well under these conditions.

With only 29 percent (670,000 acres) of the Flathead National Forest managed vegetatively, and 71 percent (1,630,000 acres) not available for vegetative manipulation, we feel confident that the Forest will adequately provide old growth that can and will be sustained by natural causes.

Co-workers and I now have a record of more than 90 active pileated woodpecker nests and roosts, almost all of which are on the Flathead National Forest. The mean dbh of these trees is 30 inches. These trees probably average over 300 years old. A few nests are in trees 20 inches or even smaller, but the minimum cannot be considered suitable in the long-term. Our only 2 samples of pileateds nesting in trees <20 inches dbh ended in nest failure. One often hears that animal species found in old growth prefer rather than require such habitats. The propensity to differentiate habitat or habitat components as either preferred or required is, in many cases, illogical and without scientific merit. If most pileated woodpeckers select nest trees considerably greater than 20 inches one must assume, unless there is compelling evidence to the contrary, that pressures of natural selection favor that choice. The selection is associated with species fitness. At the current time there are many 20 inch or smaller larch, yet few pileateds select them. Pileateds select old/old growth because old/old growth provides habitat with a higher probability of successful nesting and long-term survival. They are "programmed" to make that choice after centuries of evolving with old growth. Minimum viable populations cannot be sustained if only marginal habitat is provided. We base too many conclusions on short-term observations.

If the Flathead is serious about old-growth management, old/old growth stands should be dedicated and managed for retention. Maintaining only "young" old growth with relatively short rotation periods represents a policy of old-growth truncation. It is not a sound approach, ecologically or aesthetically. Any plan that focuses on old/old growth harvest and replacement with "young" old growth stands does not reflect responsible husbandry.

A

3. Distribution of Old Growth

It is difficult to ascertain from the plan what the actual minimum amount of old growth will be in the future (even if one were to assume that old growth actually will be biologically old/old growth and not stands only 120 or 150 years old).

Although old growth apparently will be retained in some riparian areas (and available to unscheduled harvest) the basic approach, as I understand it, calls for three 600 acre units of old growth in each 50,000 acres. This represents 3.6% old growth. In a worst case, distributions could result in gaps of 16 miles or more between old-growth islands or strips!

Too much uncertainty, in relation to distribution and distance between stands, exists in the plan. Based on research on cavity-nesting bird habitat in the Northern Rocky Mountains, co-workers and I have suggested that a minimum of 10% old growth be maintained in all planning units (McClelland et al. 1979). In a recent book entitled, "The Fragmented Forest" Harris (1984) suggested that old growth be planned in distributions and interconnected archipelagos to reduce

B

RESPONSE TO UNIVERSITY OF MONTANA (Continued)

B. Providing for the distribution of the old growth within the "managed" part of the Forest was another difficult problem. The Flathead National Forest Interdisciplinary Team chose to use the riparian areas to provide distribution. This was done because riparian areas are inherently well distributed across the Forest, they are fertile and needed extra protection for the other resources they provide. We feel providing old growth along riparian areas is much preferred over isolated "blocks" of old growth within the managed Forest.

How well the old growth is provided will be determined through monitoring of the old growth component over time.

the dangers of isolation. It seems to me that such an approach is sound. Old-growth units cannot be allowed to become islands in a surrounding sea of young stands (see McCoy 1983, and Blake and Karr 1984). Each planning unit or compartment needs an old-growth component. For example, if a compartment is 50,000 acres, 5,000 acres should be programmed for old growth equitably distributed by age, elevation, and stream order. It is not logical to consider that the majority of the "quota" is filled by old growth in designated wilderness or in riparian areas.

More consideration needs to be given to the values intrinsic in low elevation, old/old growth (see Mannan 1984). Although such stands are commercially valuable, they often represent habitat with the highest density and diversity of wildlife and plants. Where in the Flathead Plan is there any description of elevational distribution of old-growth sites? The only reference I find is that they will be below 5000 ft. Any sound plan must include a description of how stands will be equitably distributed in valley bottoms, mid-slopes, ridge tops, etc. -- throughout the forest. The current plan makes possible a distribution consisting of riparian and ridge top sites only. Even on riparian sites, actual harvesting levels are not clear. Riparian stands will maintain their own diversity if left alone. They rarely "need" manipulation for the benefit of wildlife.

B

Before a final plan is adopted, I believe the Flathead needs to completely reevaluate the criteria, rationale, and objectives of old-growth management. I do not believe the proposed plan accommodates the intent or the letter of the 1976 National Forest Management Act in maintaining diversity and viable populations of all wildlife. I value the opportunity to comment on the Flathead Plan. Thank you.

Sincerely,

B. Riley McClelland

B. Riley McClelland
Professor

BRM:sp

READEX FICHE best copy available

Old Growth References

Blake, J.G. and J.R. Karr. 1984. Species composition of bird communities and the conservation benefit of large versus small forests. Biol. Conserv. 30:173-187.

Bury, R.B. 1983. Differences in amphibian populations in logged and old growth redwood forest. Northwest Science 57:167-178.

Harris, L.D. 1984. The fragmented forest: island biogeographic theory and the preservation of biotic diversity. Univ. of Chicago Press, Chicago, IL 211 pp.

Juday, G.P. 1978. Old growth forests: a necessary element of multiple use and sustained yield National Forest management. Environ. Law 8:497-522.

Mannan, W.R. and E.C. Meslow. 1984. Bird populations and vegetation characteristics in managed and old-growth forests, northeastern Oregon. J. Wildl. Manage. 48:1219-1238.

McClelland, B.R., S.S. Frissell, W.C. Fischer, and C.H. Halvorson. 1979. Habitat management for hole-nesting birds in forests of western larch and Douglas-fir. J. For. 77:480-483.

McCoy, E.D. 1983. The application of island-biogeographic theory to patches of habitat: how much land is enough? Biol. Conserv. 25:53-61.

S-101

8/11/83
BJ

(406) 982-3301

Biological Station
University of Montana
East Shore
Bigfork, MT 59911

10 August 83

Mr. John L. Emerson
Flathead National Forest
Post Office Box 147
Kalispell, Montana 59901

Dear Mr. Emerson:

re: Flathead Forest Management Plan: Draft EIS

The Flathead National Forest encompasses a large portion of the Flathead River Basin and, thus, management decisions concerning rates and methodology of timber harvest and regeneration have direct impact on quality of water flowing from the Basin into Flathead Lake. Yet, I found the Plan and EIS very general and vague concerning impacts various management options may have on water quality, particularly sedimentation due to increased water yield from harvest sites (cf. Table III-5 in Draft EIS). The present methodology for routine estimation of water yields in the Flathead Forest streams are based on research in areas (e.g. Idaho batholith) that are very different geologically and have very different runoff (water movement) characteristics. Management options for the Flathead Forest should stress the need for gathering site-specific runoff and water yield data within this forest to properly estimate water and sediment yields from disturbed areas. Accurate water and sediment data are needed, because our research at UMBS has clearly shown that sediments carried by the Flathead Rivers fertilize Flathead Lake. Since "water yield... is already above acceptable limits in a number of watersheds..." (III-42, Draft EIS), I must conclude that existing forest management practices are contributing to the accelerating eutrophication of Flathead Lake. This problem can only be solved by (a) better understanding fluvial mechanics in relation to precipitation, runoff, and nature of forest disturbance and (b) emphasizing canopy regeneration to re-establish hydraulic equilibrium within severely disturbed watersheds. The final EIS should more firmly recognize water/sediment problems for each management option.

A

B

Equal Opportunity in Education and Employment

RESPONSE

A. **The Forest has developed a sediment prediction model which will be used on roads and timber sales in critical fishery streams to estimate the impacts from management activities. Data has been gathered and calculations have been made for major bull trout fishery streams in the Swan River drainage during 1983 and 1984. Similar work is now being done in the North Fork of the Flathead River. Eventually, investigations and calculations of water and sediment yield will be made for all important fisheries and other important streams throughout the Forest. The data gathered will be specific for individual streams and will be applied to the model.**

B. **The Forest Plan includes more specific standards dealing with water. Best Management Practices are also included which specify standards for resources and management practices, which when followed will protect or improve the quality of the water resource (see Chapter II of the Forest Plan under Forest-wide Standards for Water).**

S-101

Mr. John L. Emerson
Flathead National Forest
10 August 83
Page 2

Water quality objectives are not clearly delineated in the Forest Management Plan, although a monitoring program (Section V, Forest Plan) is recognized as a necessity in order to conform to the Forest Management Act. However, I believe the water quality monitoring costs are grossly underestimated, considering the geochemical diversity of streams in the Flathead Basin. Indeed, the recommended allocations could easily be spent in a single watershed in order to gather needed time-series data. Budget constraints may dictate that monitoring of water quality be limited to one or a few disturbed (e.g. Big Creek on North Fork) and comparatively pristine (e.g. Lion Creek on Swan) watersheds to insure enough data are gathered to be at least locally meaningful.

Water quality will be a big issue in determining the success of the management option eventually selected for implementation. Therefore, water quality objectives and trade-offs should be more clearly and logically discussed in the Forest Plan. Perhaps a thorough reading of the Final Report of the Flathead River Basin Environmental Impact Study by forest planners is in order prior to preparation of the Final EIS on the future of the Flathead Forest.

C

Sincerely,

Jack A. Stanford

Dr. Jack A. Stanford
Director

JAS/df

RESPONSE TO UNIVERSITY OF MONTANA (BIOLOGICAL STATION) (Continued)

C. The Forest Monitoring Program specifies acceptable variability and trends for each of the monitoring items, which if exceeded will alter or stop the practice. Funding is a limitation to the monitoring program. If additional funding becomes available, more extensive sampling will be implemented.

LIST OF COMMENTERS

This list includes the name of all persons submitting written comments on the DEIS and Proposed Forest Plan issued in 1983 and the DEIS and Proposed Forest Plan Supplements issued in 1984. Commenters are listed alphabetically by the following groups:

Page
Indian Tribes and Federal Agencies ---------------------------- VI-153
State Agencies ---------------------------- VI-154
Local Government and Elected Officials ---------------------------- VI-154
Educators ---------------------------- VI-154
Organizations ---------------------------- VI-155
Industry and Business ---------------------------- VI-155
Individuals ---------------------------- VI-156

Many comments were received from individuals with no return address. Unless we could find their name in a local telephone directory, these names could not be included on the Forest Plan mailing list. These names and comments, however, are included on the commenter's list and responses developed for their comments. Also, about six comments were received whose names were illegible. These letters were reviewed, but their names could not be placed on the commenter's list.

Comments received after the March 30, 1985 cut-off date were considered in formulation of the final documents, but are not included in the comment summaries.

A. INDIAN TRIBES AND FEDERAL AGENCIES

	Comments Received On		
Commenter	1983 DEIS & Plan	1984 DEIS & Plan Supplements	Index of Comment Responses - Page -
Blackfeet Tribe		X	VI-17
Confederated Salish and Kootenai Tribes		X	VI-19
U.S. Department of Agriculture - Office of Minority Affairs	X		VI-22
U.S. Department of Defense - Department of the Air Force		X	VI-23
U.S. Department of Energy - Bonneville Power Administration		X	VI-24
U.S. Department of the Interior - Bureau of Mines		X	VI-28
U.S. Department of the Interior - Glacier National Park	X	X	VI-37
U.S. Department of the Interior - Office of Environmental Project Review	X	X	VI-43
U.S. Environmental Protection Agency	X	X	VI-56
Late Commenter			
U.S. Department of the Interior - Fish & Wildlife Service		X	VI-29

B. STATE AGENCIES

	Comments Received On		
Commenter	1983 DEIS & Plan	1984 DEIS & Plan Supplements	Index of Comment Responses - Page -
Flathead Basin Commission		X	VI-60
Montana Bureau of Mines & Geology	X		VI-61
Montana Department of Fish, Wildlife, & Parks	X	X	VI-63
Montana, State of (Office of the Governor)	X	X	VI-98

C. LOCAL GOVERNMENT AND ELECTED OFFICIALS

	Comments Received On		
Commenter	1983 DEIS & Plan	1984 DEIS & Plan Supplements	Index of Comment Responses - Page -
Brown, Bob (State Senator)		X	VI-128
City of Columbia Falls		X	VI-129
Flathead County Board of Commissioners	X		VI-132
Himsl, Matt (State Senator)		X	VI-134
Lincoln County Commissioners		X	VI-135
Late Commenter			
Cohen, Ben (State Representative)		X	VI-130

D. EDUCATORS

	Comments Received On		
Commenter	1983 DEIS & Plan	1984 DEIS & Plan Supplements	Index of Comment Responses - Page -
Flathead School District #5	X	X	VI-137
Flathead School District #6		X	VI-139
San Francisco State University	X		VI-141
University of Montana	X	X	VI-142
University of Montana (Biological Station)	X		VI-151

E. ORGANIZATIONS

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
American Fisheries Society	X	X
American Wilderness Alliance		X
Back Country Horsemen of Missoula		X
CHEC (Cascade Holistic Environmental Consultants)		X
Coalition for Canyon Preservation	X	X
Concerned Citizen		X
Continental Divide Trail Society	X	
Cut Bank Snowgoers		X
Defenders of Wildlife	X	X
East Slope Taxpayers Association		X
Echo Lake Homeowners Association		X
Flathead Audubon Society	X	X
Flathead Snowmobile Association	X	
Flathead Wildlife, Inc.		X
Great Bear Foundation	X	X
LaSalle Grange #47		X
Mission Mountain Snowmobile Club		X
Mission Valley Backcountry Horsemen		X
Montana Bowhunters Association		X
Montana Historical Society	X	
Montana Wilderness Association (Flathead Chapter)	X	X
Montana Wilderness Association (State Chapter)	X	X
Montana Wildlife Federation	X	
National Audubon Society	X	X
National Forest Recreation Assoc.		X
National Wildlife Federation	X	X
New Creation Center for Environmental Research		X
North Fork Preservation Association	X	X
Rotary International of Whitefish		X
Sierra Club (Flathead Group)		X
Sierra Club (Upper Missouri Group)	X	
Swan Lake Recreation Association		X
Swan View Coalition		X
Trout Unlimited		X
Wildlife Management Institute	X	X
Late Commenter		
Coalition for Canyon Preservation		X
Flathead Back Country Horsemen		X
Mission Valley Backcountry Horsemen		X
Nature Conservancy		X

F. INDUSTRY AND BUSINESS

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
AMOCO Production Company	X	
ARCO	X	
Atlantic Richfield Company	X	X
Bache, Cecil Logging		X
Beatrice Dairy Products (Skyline Meadow Gold)		X
Bigfork Chamber of Commerce		X
Bothman Logging		X
CRD Timber & Logging		X
Canyon Logging Company	X	
Champion International Corporation (Rocky Mountain Operation)	X	X
Champion International Corporation (St. Regis Paper Company)		X
Champlin Petroleum Company		X
Chevron USA, Inc.	X	X
Columbia Falls Chamber of Commerce		X
Decker Logging Company, Inc.		X
Emett Trucking & Logging		X
Flathead Bank of Bigfork		X
Forest Oil Company	X	
Glacier Park Company		X
Grande Domain Retreats (Spotted Bear Ranch)	X	
Hankinson Brothers Trucking		X
Hanley Timber Company		X
Hoo-Hoo International, No. 187		X
Hungry Horse News		X
Industrial Wood Products, Inc.		X
Inland Forest Resource Council	X	X
Kalispell Chamber of Commerce	X	
Kalispell Pole & Timber Company		X
Long Machinery	X	
Maner Logging, Inc.		X
Marathon Oil Company		X
Minerals Exploration Coalition	X	
Montana Logging Association	X	X
Montana Outfitters & Guides Assoc.	X	
Montana Power Company	X	
Montana Women in Timber	X	
North American Outfitters		X
Northwest Machinery, Inc.		X
Northwest Parts & Rigging Company	X	X
Phillips Petroleum Company		X

F. INDUSTRY AND BUSINESS (continued)

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Plum Creek Lumber Company (Missoula, Montana)	X	
Plum Creek Lumber Company (Seattle, Washington)		X
Pyramid Mountain Lumber, Inc.	X	X
Quiram Logging, Inc.		X
Rocky Mountain Oil & Gas Association	X	
Senrud Logging		X
Sohio Petroleum Company		X
Stoltze, F. H. Land & Lumber Company	X	X
Stout, B. B. & Associates		X
Sudan Logging		X
Superior Lumber, Inc.		X
Texaco, Inc.	X	X
Topper Wood Trucking		X
True Oil Company	X	
URECO, Inc.	X	
Valley Bank of Kalispell	X	X
Vincent Logging, Inc.		X
WETA (Western Environmental Trade Association)		X
Wood Forestry Services		X

G. INDIVIDUALS

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Aadson, Pat J.		X
Abell, A. L.		X
Abell, Claire		X
Abell, Russell (Mr. & Mrs.)	X	X
Abrahamson, Lynn		X
Adams, Donald W.		X
Adams, Paul	X	
Adams, Randall		X
Adams, Ron		X
Adamson, Chloe		X
Adkins, Jim	X	
Agortia, Donna		X
Aklestad, Arnold R.		X
Albert, Eugene J.		X
Albert, Tom	X	
Albertus, Patrick	X	
Alderman, Deborah		X
Aleson, Darrel J.		X
Alfred, Lynda		X
Allen, Elwin L.	X	
Allers, Kerby	X	
Allison, B.	X	
Alt, Bernard W.	X	X
Altomare, Deborah		X
Anders, Jerry	X	X
Anderson, A. W.		X
Anderson, Brian	X	
Anderson, Danno	X	
Anderson, Daryl E.	X	
Anderson, Dennis		X
Anderson, Jerry	X	
Anderson, John F.		X
Anderson, Julia V.	X	
Anderson, Michael	X	
Anderson, Rick	X	
Anderson, Thomas E.	X	
Andrews, Colin C.		X
Anonymous	X	X
Armstrong, Dave D. (Mrs.)		X
Armstrong, Evan W.	X	
Armstrong, Leonard	X	
Arneson, Eugene A.	X	
Arneson, Ronald I.	X	
Arnold, Hayes	X	
Arnold, Thomas W.	X	

G. **INDIVIDUALS** (continued)

	Comments Received On	
Commenter	1983 DEIS & Plan	1984 DEIS & Plan Supplements
Aronson, Robert & Phyllis		X
Arthur, Jean		X
Arvidson, Dave	X	
Arvidson, Rudy W.		X
Ash, Rod	X	
Aspevig, Kathy		X
Atchinson, John J. (Dr.)		X
Atchinson, Wade	X	
Atkerson, D.		X
Atkinson, Mike	X	
Ausk, Ken		X
Austin, Briggs & Alice	X	X
Averill, Lester W.		X
Ayers, Lenora	X	
Baarson, Gary R.	X	
Babb, Raymond F.		X
Babcock, Ann T.		X
Babcock, Teresa		X
Bache, Darell Wayne		X
Bache, Frank		X
Bache, Paul		X
Bache, Sandy		X
Bachurski, Joe	X	
Bacon, James T.		X
Bacon, Marilyn	X	X
Baher, Bonnie		X
Baiar, Jeff A.	X	
Bailey, James B.	X	
Bailey, Scott D.		X
Baker, Beth		X
Baker, Dale		X
Baker, Dan		X
Baker, Larry	X	
Baker, Tim		X
Baldwin, Mark		X
Ballon, Robert M.		X
Bangeman, Johanna	X	
Barber, Daniel W.	X	
Barber, Janet A.		X
Barber, Joseph		X
Barcklay, Rod	X	
Barhour, Nathan	X	
Barker, Lance	X	
Barkley, Robert W. (Mr. & Mrs.)	X	X
Barlow, Jon		X
Barnett, Jim		X
Barrett, Nancy K.		X
Barrow, Dennis A.		X
Bartel, Larry		X
Bartel, Rick L.		X
Bartlett, Carolyn		X
Bartlett, Robert & Friede		X
Barton, James D.	X	
Basham, Jay		X
Battalon, Mark		X
Batterson, Karin		X
Batterson, Neil A.		X
Baty, Douglas	X	
Bauer, Duane	X	
Bauer, Richard J.		X
Bauer, Robert E.		X
Bauer, Steve	X	
Baugh, Odin A.		X
Baughman, W. H.		X
Baumann, C. F.	X	
Baumgartner, Leslie		X
Baxter, Larry, Kathy, Colden, Lee, & Corbett		X
Baze, Rayman		X
Beach, Pixie		X
Beach, Roland L.	X	
Beattie, William D.		X
Beaudion, Carol M.		X
Beavens, Jack G.	X	
Beaver, Randy & Kam		X
Beck, Bob		X
Beck, Joseph	X	
Beckedahl, Mark		X
Becker, Buffy		X
Beckley, Robert R.		X
Beebe, John K.		X
Beebe, Teddye L.		X
Bell, Carole	X	
Bell, Dave A.	X	
Below, Kristen S. & Scott D.	X	
Benck, Cindy		X
Bengston, Chuck		X
Bennett, C.G. & L.P.	X	
Bennett, Hal		X
Bennetts, Barbara	X	
Bennington, Elwin	X	
Benson, Carl A.	X	
Benson, Dorthy D.	X	
Benson, Frances M.	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Berglund, Bob	X	
Berglund, Bruce	X	
Berkhoffer, Carl		X
Berlinger, Charles	X	
Bernal, Stan		X
Berner, Caroline K.		X
Berner, David (Dr.) & Caroline S.	X	X
Berner, Heather		X
Berner, Jerry		X
Berner, Natasha		X
Berry, Hannah A.		X
Berry, John S.		X
Berry, LeRoy I.		X
Berry, Matthew		X
Berry, Rick	X	
Berry, Rita V.		X
Berry, Sarah E.		X
Berry, Sharon L.		X
Bessner, Teresa		X
Best, James R.		X
Betson, Don C.	X	
Betters, Doug		X
Beuon, Arnold		X
Biasca, Walter	X	
Bibler, Helen		X
Bibler, Louis A. "Sam"	X	
Bick, Herbert L.	X	
Bickery, Allen		X
Bickford, Robert		X
Bickmore, George R.		X
Bigge, Jay		X
Bigge, Jesse H.		X
Billingsley, Lauren		X
Bingham, Gary E.		X
Bird, Don & Kim		X
Birdwell, Rick		X
Birke, Douglas E.	X	
Birky, Brian	X	
Birky, Ezra	X	
Birky, Frank	X	
Birky, J.J.	X	
Birky, Mike	X	
Birky, Paul	X	
Birmingen, Lester	X	
Birton, Richard	X	

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Bishop, Bill		X
Bishop, Martin		X
Bishop, Matthew L.		X
Bishop, Richard R.		X
Bissell, John		X
Bissner, Teresa		X
Bivens, Mike	X	
Bjorsness, A. L.		X
Bjorsness, Phyllis		X
Black, Jeanne		X
Blackman, Evelyn M.		X
Blades, Rick	X	
Blair, Alida Wright		X
Blair, Jean		X
Blair, R. V.	X	
Blakney, Tom		X
Blank, Tamara R.		X
Blixt, T. W.		X
Blodgett, Ron	X	
Blood, W. A. "Lex" & Alice F.	X	X
Blume, Herman	X	
Blythe, Becky	X	
Bodeen, Wesley	X	
Boeck, Kathy	X	
Boggs, Ed	X	
Boggs, Terri	X	
Boggs, Traci & Ed		X
Boggs, Tyler R.		X
Bohne, Don		X
Bollow, B.		X
Bonderude, Larry J. (Dr.)		X
Bonick, Randi		X
Bonin, Susan M.		X
Boody, Bruce	X	
Borcherdt, Bob	X	X
Borden, Rick		X
Borgen, Norman & Florence		X
Boshuizen, Hope	X	
Bowler, Jana D.	X	X
Bowman, Andrew W.	X	
Boyd, Diane	X	X
Boyd, Wayne E.		X
Bradley, Alan K.		X
Bradley, Donald C.		X
Bradley, Homer L.		X
Bradshaw, Mary		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On	
	1983 DEIS & Plan	1984 DEIS & Plan Supplements
Bradshaw, Merrill		X
Branch, Carol	X	
Branden, Ernest	X	
Brandt, Esther		X
Brandvold, Linda		X
Brant, Barb Smith		X
Brant, Patty		X
Braun, Steven J.		X
Brebner, Jamie		X
Bremer, Michael A.		X
Brenden, Morris R.	X	
Brennan, Michael J.		X
Brewer, Chris		X
Brewer, Jacqueline C.		X
Brewer, W. David		X
Brieger, Lucianne		X
Briggeman, B.J. Jr.		X
Briggeman, Frances		X
Briggs, John L.		X
Brinkerhoff, John W.	X	
Britton, Kathryn M.	X	
Britton, Michael P.	X	
Broad, Harold		X
Broden, Bruce		X
Brodowy, Tom		X
Brooks, Ron		X
Brosten, Henry & Magdalyn	X	X
Brown, A. Lynnette		X
Brown, Alvina E.		X
Brown, Betty G.		X
Brown, C. A.		X
Brown, Dale & JoJo		X
Brown, Donald L.	X	
Brown, F. Olive		X
Brown, Gene	X	
Brown, Gladys	X	
Brown, Glen		X
Brown, John L.		X
Brown, Larry J.		X
Brown, Lee		X
Brown, Louis E.		X
Brown, Raymond G.		X
Brown, Regina		X
Brown, Robert L.		X
Brown, Sally		X
Brown, Tamzin		X
Brozoosky, Newman V.		X
Bruce, Paul	X	X
Bruninga, John H. & Kristin R.	X	X
Brunk, Ronald		X
Bruno, Louis		X
Brunson, Mark	X	X
Brusell, Beaneita	X	
Brusell, Robin	X	
Brusell, Roy	X	
Bruyer, Richard	X	
Bruzek, Bill		X
Bruzek, Judith		X
Buchanan, Chester & Elinor		X
Buck, Shannon	X	
Buck, Daniel G.	X	
Buck, David E.	X	
Buck, Forrest E.	X	
Buck, Jerry A.	X	
Buck, Margaret	X	
Buck, Terry	X	
Bud, Joan	X	
Buentemeier, Barbara	X	X
Buentemeier, George & Dora		X
Buentemeier, Ronald H.		X
Bugbee, Henry	X	
Buhmiller, John R. (Mrs.)	X	X
Bukantis, Robert		X
Buls, Patrick K.	X	
Bundrock, Brice & Becky	X	X
Bundrock, Loraine		X
Burden, Dan & Sheri	X	X
Burgard, Don J.		X
Burgess, Don		X
Burgin, Jay K. & Judi S.	X	
Burglund, Pamela J.		X
Burken, Allan H.	X	
Burkhart, Paul		X
Burkhart, Roy & Kathy	X	X
Burmood, Robert L.		X
Burns, Donald & Cynthia		X
Burns, Donald & Myrtle		X
Burns, Wayne E.		X
Bush, Donald L.	X	
Bush, Julia	X	
Bushnell, Bob		X
Buss, Ralph E.		X
Butterfield, Bart R.	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Butters, Jack		X
Butts, Elden L.	X	
Butts, Eldin R. & Laura M.	X	
Butts, Gerald L.		X
Butts, Sherman L.	X	
Byrd, Caroline		X
Byrne, Kerrie		X
Cabell, Gary		X
Cada, Frank	X	X
Cadwell, Philip		X
Cadwell-Steele, M. H.		X
Cahill, Susan		X
Caldwell, Mary		X
Calkin, George L.		X
Calkin, Lynn B.		X
Cameron, Barbara J.		X
Cameron, Byron	X	X
Campbell, Lynn M.		X
Canen, Howard G.	X	
Cannis, Marilyn		X
Cannon, James L.	X	
Carl, Ralph W.		X
Carlton, D. C. "Jasper"		X
Carlton, Susan J.		X
Carpenter, Les		X
Carpenter, Susan		X
Carroll, Bernice R.		X
Carroll, Harold J.		X
Carroll, John C.		X
Carroll, Lois G.		X
Carson, Grace W.		X
Carspecken, Randy		X
Carter, Brian		X
Carter, Jack L.		X
Carter, Steven & Janice	X	
Cartner, Loretta		X
Cartwright, Bob	X	
Cash, Duane	X	
Cassick, John		X
Cassidy, Patricia		X
Cathey, William A.		X
Cathey, Sheryl		X
Caughey, Jack D. & Diane	X	X
Caveny, Kenneth E.	X	
Ceravolo, John		X
Cervenak, Susan		X
Chabot, Teresa L.	X	
Chamblin, John		X
Chappell, James & LeeAnn	X	
Chase, Bradley	X	
Chase, John		X
Chase, R. H. (Mrs.)		X
Chase, Myron P.		X
Cheek, Benjamin S.		X
Cheek, Diane K.		X
Cheek, Jane		X
Cheek, Jason M.		X
Cheek, Jerry D.		X
Cheek, Roland		X
Cheek, Tammy		X
Cheff, Bud Sr.		X
Cheman, Steve W.		X
Chilcote, Roger	X	
Chilton, Curtis J.		X
Chishol, Katie		X
Christensen, Sally M.		X
Christiansen, Bruce	X	
Christison, K. W.		X
Christman, Helmeth	X	
Christofferson, J. D.	X	
Christoph, Marguerite		X
Christopher, Floyd		X
Clancey, M. F.		X
Clancey, Pat	X	
Clapper, Charles	X	
Clare, LaVern		X
Clark, Doug		X
Clark, Greg		X
Clark, Jean		X
Clark, Robert C.	X	
Clawson, William E.	X	
Clayton, Larry (Dr.)	X	
Clayton, Matthew		X
Clemenger, Jon		X
Cleveland, David	X	X
Cline, John W.	X	X
Clowers, Van A.	X	
Cluka, Donald C.	X	
Clute, Betty		X
Clute, Wanda N.	X	

C. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	Comments Received On 1984 DEIS & Plan Supplements
Cobler, Leonard A.	X	
Cobler, Leonard L.	X	
Cochrane, Lucy		X
Cofer, Denise	X	
Coff, Ted	X	
Coffman, Allen L.		X
Cohen, Barry		X
Cohenour, John	X	
Colbert, Bruce	X	
Collier, Ervin L.	X	
Collins, Cheryl		X
Collins, John B.		X
Collins, Randall C.	X	
Collom, Donna M.		X
Columbine Glassworks		X
Colvin, Peter		X
Compton, Glenn	X	X
Conklin, Diane	X	
Conklin, Glenn H.	X	X
Conklin, Hugh	X	X
Conklin, Joyce L.	X	X
Conklin, Kim H.	X	
Conklin, Marc	X	
Conn, Robert		X
Connell, Patrick O.		X
Connelly, James P. (Mr. & Mrs.)		X
Conner, James R.	X	X
Conner, Michael D.		X
Connor, Alan R.	X	
Cooley, Thelma R.		X
Coolidge, Linda		X
Cooper, Fred		X
Cooper, Gary J.		X
Cooper, Judy		X
Cooper, Ron		X
Cooper, Tim		X
Corbett, Jerry	X	
Corcoran, Debi		X
Corl, Thomas V.		X
Corlis, Charles	X	
Cornelius, Connie		X
Cornell, Jay A.	X	
Cossan, Allan B.	X	
Cote, David	X	
Cote, Gary A.	X	
Cote', Lionel		X

Commenter	Comments Received On 1983 DEIS & Plan	Comments Received On 1984 DEIS & Plan Supplements
Couture, Carla		X
Covell, Edwin & Violet	X	X
Coverdell, Clarice		X
Coverdell, Richard R.		X
Cox, Louise	X	
Coyle, Sandra		X
Cozzens, Sue	X	
Craft, Keja		X
Craft, Nance		X
Craft, Ron D.	X	
Crawford, Billie C.	X	
Crawford, David		X
Crawford, Margery A.	X	
Crismore, Bill Jr.		X
Crismore, Carol		X
Crismore, Stuart		X
Crismore, William S.		X
Cristafir, Darryl		X
Cristafir, Doug		X
Crivello, William J.		X
Cross, Deborah L.		X
Crowe, Berna Jean	X	
Crowe, David	X	
Cummings, Edward J.		X
Cunningham, Gordon G.		X
Cunningham, Kathy	X	
Cunningham, Linda		X
Currie, Ron	X	
Curtis, Donald P.		X
Curtis, James F.		X
Curtiss, Ronald & Patricia		X
Cusick, Gregory D.	X	
Dachs, George R.		X
Dagger, Steve R.		X
Dahl, Jennie M.		X
Daigre, Susan D.		X
Dalimata, Mary & Richard		X
Dalke, Ed	X	
Dalton, Thomas A. Jr.	X	X
Danelz, Greg		X
Daniels, Inez E.	X	
Danno, Evan F.		X
Darling, Pat		X
Darrow, Douglas D.	X	
Darrow, Elna		X
Darrow, George		X
Darrow, George		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
David, Kenneth C.	X	
Davis, Craig T.		X
Davis, John R.		X
Day, Rebecca		X
Dean, James F.	X	
Dean, Willow	X	
Deault, Kenneth Montgomery		X
Dechart, Steve		X
Decker, Debra L.		X
Decker, Donald D.	X	
Decker, Margaret		X
Decker, Mark J.	X	
Decker-Hess, Janet		X
Deda, D.	X	
Deitrick, Oscar	X	
Dekz, John	X	
Delaney, Mary		X
Delap, D.W. Mrs.		X
DeLarios, Daniel	X	
Dello-Russo, Robert		X
Delong, Annette	X	
DeLong, Daniel	X	
DeLong, Thomas E.	X	
DeLuca, Jean		X
DeMeritt, Kay	X	
Dempsey, Linda D.		X
Denney, Kent	X	
Denning, March	X	
DePratu, R.		X
DeRentis, Norma J.		X
Dern, Derril	X	
Dern, Lloyd	X	
DesJarlais, Denise	X	
DesRosier, Anne L.		X
DesRosier, Ed		X
Deschamps, Ed		X
Desser, Rochelle		X
Deveny, Chris		X
DeVries, Herbert		X
Dexter, Barry N.		X
Diamont, Ellen-Sue		X
Dickinson, Barry E.	X	
Dickinson, Christine J.	X	
Dieball, Beverly		X
Diesman, Dennis & Donna	X	
Dilley, John	X	
Dirks, Earl	X	
Disney, Lois M.	X	
Disney, Robert J.	X	
Dobson, Brian		X
Docks, George R.	X	
Dodge, Larry	X	
Dofelmire, Gary	X	
Dolezal, Herman		X
Donofrio, Mac	X	
Donsbach, Bonnie	X	
Donsbach, Dave	X	
Donsbach, Tim	X	
Donsbach, William Jr.	X	
Doughty, Juliann		X
Downes, Lee	X	X
Downey, David W. (Dr.)	X	X
Downey, Janet		X
Downey, John M.		X
Downey, Mark		X
Downs, Bill		X
Draeger, Ginny		X
Drake, Jack A.		X
Drent, Steven M.	X	
Droney, Kent	X	
Dry, Jim		X
Dryer, Don		X
Drynan, Craig B.		X
Drynan, Jane L.		X
Duff, Mark L.		X
Durham, Jeffrey		X
Duricka, Richard		X
Durz, Wendell B.		X
Dutter, Debbie		X
Dutter, Kenneth & Mary		X
Dutter, Ralph (Mr. & Mrs.)		X
Dutter, Randy & Ramona		X
Dutter, Tim		X
Duval, David	X	
Duval, James	X	
Eastman, Joseph H.		X
Edwards, A. T. & Leva		X
Edwards, Arnold R.	X	X
Edwards, Frank L.	X	
Edwards, Ricky D.		X
Efken, David A.	X	
Eggar, Kevin	X	
Egger, Darol		X
Egtvedt, Arthur F.	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	Comments Received On 1984 DEIS & Plan Supplements
Ehlers, Charles (Mr. & Mrs.)	X	
Ehlus, Morris	X	
Eiye, Sandra		X
Eklund, Dallas F.	X	
Eleedahl, Margaret		X
Ellenwood, Jack	X	
Ellenwood, Konnie	X	
Ellingson, Jeff		X
Elliott, Robert P. Jr.	X	
Elliott, Roger H.		X
Ellis, Bonnie K.	X	X
Elser, Arnold "Smoke"		X
Emerson, Mildred		X
Emerson, Robert		X
Emett, Guy R.		X
Emmert, Bill		X
Emmert, Randy Lee	X	
Emmert, Wm. Scott		X
Engeibren, Judy		X
Enghusen, Chris L.		X
Engibous, Bob		X
England, Teri		X
Ensign, Charles		X
Ensign, Dave		X
Ensign, Diane		X
Ensign, Richard & Elizabeth	X	
Epling, G.P.		X
Erdody, Elizabeth		X
Erickson, Faith E.	X	
Erickson, Leif Sr.	X	
Erickson, Leigh R.	X	
Erickson, Marvin	X	X
Erickson, William & Olga		X
Essig, Don A.		X
Estes, Kim		X
Evans, Leo B.		X
Evans, Paul M. (Mrs.)		X
Evans, Toni R.	X	
Evans, Toni R.	X	
Evins, Beckie	X	
Evins, Gary	X	
Eystad, Barbara, L.	X	
Eystead, Willie	X	
Fagerland, Lloyd		X
Fairchild, Sharon		X
Falconer, Phyllis		X

Commenter	Comments Received On 1983 DEIS & Plan	Comments Received On 1984 DEIS & Plan Supplements
Falk, Terry		X
Fallon, Fay		X
Fauth, Gideon P.	X	
Feather, Karen	X	X
Fehunbach, Joseph E.	X	
Feland, Gary		X
Feland, John		X
Feland, Michael A.		X
Felstet, Richard	X	
Felt, Thomas Clay		X
Fenzl, Elizabeth		X
Ferguson, Arden N.	X	
Ferguson, Wayne		X
Ferrell, Douglass & Melinda		X
Fetterhoff, Rick	X	
Fetters, Andy C.		X
Fetters, Jeannie		X
Fetters, Ken		X
Fetters, Randy M.		X
Fewlass, Kathy		X
Field, Michael D.		X
Fink, Darren		X
Finneman, Emil		X
Fischer, Clinton		X
Fischer, Daniel B.		X
Fischer, Dean A.		X
Fisher, Jerry		X
Fisher, Joseph E.		X
Fisher, Robert	X	
Fitch, Robert L.		X
Fitzgerald, Cindi	X	
Fitzgerald, Edmund B.		X
Fitzgerald, Mike		X
Flagg, Fred O.	X	
Flanigan, Walter	X	
Flint, Anita		X
Floberg, Morris	X	
Flood, Joseph		X
Florida, Cecilia		X
Flowers, Mayre	X	
Flynn, Linda P.		X
Flynn, Robert G.		X
Fonner, Larry		X
Ford, Barbara L.	X	
Ford, Lester	X	
Ford, Mark N.		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Forsythe, Doug		X
Forthofer, Pete		X
Fortin, David		X
Fortin, Della		X
Fortin, Garry Lee (Mr. & Mrs.)		X
Fortin, Kim	X	
Fortmann, J. Paul & Sandra	X	
Foss, Edward L.	X	X
Foultner, William R.	X	
Foust, John B.		X
Fowler, Harry & Bertie		X
Foy, Adelaide	X	
Foy, Mark R.	X	
Frame, Jeff (Mr. & Mrs.)		X
Frame, Kathy		X
Francis, Cornelia K.		X
Franklin, Merton A.	X	X
Fraser, John A.		X
Frazier, Richard A.		X
Fredenberg, Orin W.	X	
Frederick, Abbie		X
Frederick, Betty W.	X	
Frederick, Catnip		X
Frederick, Eli		X
Frederick, John Sr.	X	
Fredericks, Dorothy		X
Freeman, Thomas W.	X	
French, Betty		X
Frerich, Tuye	X	
Frerich, Vernell	X	
Frisbee, Maryalys M.		X
Frisbee, Selden S.		X
Frisbie, Gordon		X
Friske, F. D.	X	
Frizelle, Deanna		X
Froystad, Norman	X	
Fruit, Bernard		X
Fruit, Gertrude		X
Fulkerson, A. L.		X
Fulkerson, Arthur L.		X
Fuller, Charles	X	
Fuller, Ed	X	
Fuller, George	X	
Fuller, Michael R.		X
Fullerton, Gayle	X	
Fulton, Bob		X
Funk, Jeffrey		X

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Funke, Kristi		X
Furlong, Marion	X	
Fuselier, Gary		X
Fuselier, Vickie		X
Gabert, Allan W.	X	
Gabert, Maggie	X	
Gabler, Dave	X	
Gaffaney, Larry G.		X
Gaikowski, Kathy		X
Gall, Daniel P. (Mr. & Mrs.)		X
Gall, Peter E.		X
Gallagher, Mary		X
Galles, Paula		X
Gard, Tim		X
Gardner, Mary Jo		X
Gardner, Ruth & Mike	X	X
Garlough, Richard D.		X
Garlough, Richard D. (Mrs.)		X
Garnett, Monte	X	
Gartin, Joe	X	
Garwood, Susan		X
Gary, Steve		X
Gasser, Dennie	X	
Gatchell, John G.		X
Gates, Robert S. Jr.		X
Gaut, Mark	X	
Geary, Thomas Jr.	X	X
Gee, Perry & Lori		X
Geer, William		X
Geilly, Lois	X	
Gerber, Jennifer		X
Gerdes, John W. (Dr.)		X
Gerdes, M. Newell		X
Geror, David	X	
Gettig, Mark A.	X	
Gilbert, George M.	X	
Giles, Ken	X	
Gilliland, E. B.		X
Gilliland, Nancy		X
Gillispie, Dan	X	
Gilson, Charles J.	X	
Glazier, Claude & Betty		X
Gless, Karl R.	X	
Glidden, Tim	X	
Gloege, Terry W.		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Glueckert, Marilyn		X
Goddard, Paul		X
Godsey, Pat		X
Goff, Robert F.		X
Gohl, Alois J.	X	
Gold, Steve		X
Golnar, Tom		X
Gommenginger, Roy		X
Goodman, Rob	X	
Goodman, Robert	X	
Goodman, Ronald	X	
Goodneaugh, William W.		X
Goodner, Tom		X
Goodsell, Leroy		X
Goosey, Diane		X
Gordon, R. E.		X
Gorton, Earl	X	X
Gorton, Esther	X	X
Gorton, Mary	X	X
Gottfried, James A. (Mr. & Mrs.)	X	
Gottlob, Denise		X
Gottlob, Jeff		X
Gould, Richard	X	
Goulet, Duane V.	X	
Gourde, Paul & Penny		X
Graber, Robert D.	X	
Graf, Eugene E.	X	X
Graf, Richard L.		X
Graham, Garreth A.	X	
Graham, LaVern B.		X
Graham, Raymond M.	X	
Gratch, Alan S.		X
Gray, Jim		X
Gray, Lloyd		X
Green, Terry		X
Greenwald, Dennis		X
Greer, Bev		X
Greer, Bruce		X
Gregory, Camille O.		X
Gretzinger, Steve	X	
Gridley, Deborah		X
Griffin, Margo	X	
Grilley, Donna Jo	X	X
Grilley, Helen		X
Grise, Colleen A.	X	
Grisetti, James C.		X

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Grizzly Al		X
Grob, Douglas E.		X
Grober, Don		X
Groschupf, J. P.	X	
Groth, Larry		X
Grubb, Franklin R.	X	
Guay, Frank		X
Guenther, Larry	X	
Guffey, Ed	X	
Gunderson, Kari		X
Gunlock, Daren		X
Gur, Stan		X
Gustafson, Barry		X
Gustafson, Claude	X	
Gustafson, JoAnn E.		X
Guthlein, Maura		X
Haack, Dennis R.	X	
Haag, Paul	X	
Haag, Ronald D.	X	
Hacker, F. D. (Mr. & Mrs.)		X
Hadden, David		X
Hadwin, James F.		X
Hagen, Chris D.	X	
Hagen, Richard	X	
Hagen, Ronald D.	X	
Haider, Dennis J.	X	
Haisch, Ken		X
Hall, Bill	X	
Hall, Debora K.	X	
Hall, Roger A.	X	
Hall, Sam	X	
Hallesman, Patricia	X	
Hallingstad, K.		X
Hale, Ernest	X	
Hale, Larry	X	
Halsey, Daniel W.		X
Halverson, Judy	X	
Halvorson, Gary S.		X
Hamann, Eugene E.	X	
Hamilton, David		X
Hamilton, Donna	X	
Hamilton, Jeanne		X
Hamilton, Julie	X	
Hamman, Kent	X	X
Hammer, Gwen		X
Hammer, Keith J.		X
Hammer, Marvin L.		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Hammer, Wayne		X
Hammond, Buddy O.		X
Hanks, Donald	X	
Hanks, Jamey	X	
Hanley, Brian		X
Hanley, Pat		X
Hannah, James N.		X
Hanseberry, Wesley & Phyllis		X
Hansen, Brad T.		X
Hansen, Darel M.	X	
Hansen, Don		X
Hansen, Matthew	X	
Hansen, Scott	X	
Hansfeld, Michael		X
Hanson, Deborah		X
Hanson, Doris M.	X	X
Hanson, E.	X	
Hanson, Keith & Maxine	X	X
Happe, Patti	X	
Harder, Shelly		X
Hardwick, Glenn	X	
Hardy, Glenn		X
Hargreaves, Richard		X
Hargrove, Claud		X
Harke, Sandra	X	
Harp, John R.	X	X
Harper, Joel C.		X
Harrington, Gary	X	
Harrington, Kathy	X	
Hart, Gerald G.		X
Hart, Lloyd E.		X
Hart, Ronda		X
Hartley, Jerry L.	X	
Hartman, Robert L.		X
Hartranft, C.		X
Hartwell, Kate		X
Harvey, Geoffrey W. & Kathie	X	X
Harwood, Marvin C. Jr.		X
Hatch, Kathryn C.		X
Hathhorn, Kristin E.		X
Hatton, Barry R.	X	
Haugen, Lucy W.		X
Haugen, M. G.		X
Haverlandt, Jim		X

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Hawkaluk, Michael N.	X	
Hawkins, Mike & Susan		X
Hawkins, Rickie A.		X
Hawkinson, Sharon		X
Hayes, Janeane	X	
Hays, Linda		X
Hayward, Gregory	X	
Hazeltine, Ben M.	X	X
Head, H. (Mrs.)		X
Healy, Monique		X
Heam, Donald	X	
Heberling, Jon L.	X	X
Hebing, Henry J.		X
Hebves, Theodore L.		X
Heckathorn, Harbey		X
Hedges, Melissa		X
Hedstrom, Bill H.		X
Hedstrom, Judi	X	
Hegland, Norval		X
Heil, Paul	X	
Heim, Fred	X	
Heimann, Gary	X	
Heller, Marguerite T.	X	
Hendersen, James A.		X
Hendersen, Kathy & Doug	X	
Hensy, C. J.	X	
Heppell, Maryan & Bill	X	X
Herbert, Jack		X
Herbold, E. Louise	X	
Herbold, L. Mark	X	
Herman, Dolores	X	X
Herman, Henry A.	X	
Herman, Kathy		X
Herman, Renee		X
Herman, Wayne E.	X	X
Herring, Clay		X
Herrmann, Robert	X	
Herron, Dallas I.		X
Herron, Florence		X
Herron, James L.		X
Herron, Joe	X	
Herron, Marcile		X
Herzog, Rick L.		X
Hess, Craig J.	X	X
Hess, Kathleen D.		X
Hesselink, Gary		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On	
	1983 DEIS & Plan	1984 DEIS & Plan Supplements
Hessian, Blakely B.		X
Hessian, Michael A.		X
Hewitt, Thomas J.	X	
Hibbert, Bryce	X	
Hicks, Debbie	X	
Hiebert, Leonard	X	
Higgs, Charlotte		X
Higson, Charles D.		X
Hildner, Richard S.		X
Hildner, Roberta Zeal		X
Hileman, Robert L.		X
Hilgemann, James		X
Hill, Elizabeth		X
Hill, J. B.	X	
Hill, Roddy	X	
Hillson, Tom	X	
Hinrichs, Rocky R.	X	
Hirning, Susan	X	
Hobbs, Randy D.	X	
Hochmann, Lisa		X
Hodder, Beth	X	
Hodge, C. J.		X
Hodges, Jonathan R.		X
Hoerner, Douglas W.	X	X
Hoerner, E. J.		X
Hoerner, Gary V.	X	
Hoffman, Lorraine K.		X
Hoffman, Richard H.		X
Hoffmann, Lawrence	X	
Hogan, Catherine		X
Hogan, Ralph		X
Hoge, Irene B.		X
Hoge, Sterling B.		X
Hohn, Mac	X	
Holder, Duane	X	
Holder, Ed	X	
Holder, Ethel	X	
Holder, Gail Jean	X	
Holder, John	X	
Holiday, Amy R.		X
Holiday, Robert S.		X
Holien, Ray		X
Hollis, Don	X	
Holmes, Jack	X	
Holmes, Tami	X	

Commenter	Comments Received On	
	1983 DEIS & Plan	1984 DEIS & Plan Supplements
Holmquist, Becky	X	
Holterman, Jack		X
Honican, Albert E.		X
Hooker, Jack & Karen		X
Hookes, Karen		X
Hoover, Larry P.		X
Hoover, Tim		X
Hoppe, Peggy	X	X
Hopwood, Carol A.		X
Horn, Kenneth (Mr. & Mrs.)		X
Horowitz, Deborah		X
Horowitz, Ellen	X	X
Hosek, E.	X	
Hoster, Don & Myrtle	X	
Hotchkiss, Michael M.		X
Hotchkiss, Sharon		X
Hotz, Kenneth L.	X	
Houck, Bill	X	
Hout, Charles	X	
Hout, Robert S. (Mr. & Mrs.)	X	
Howard, Donald	X	X
Howard, Glen		X
Howard, Julie		X
Howe, William L.		X
Howke, Shirley Lawyer		X
Hoy, Alice Faith		X
Hoy, Daniel		X
Hoyt, Bill	X	
Hoyt, Tony	X	X
Hubbs, Donna J.	X	
Hudak, Andy		X
Hudak, David		X
Hudson, Henry G.		X
Hudson, Karen & Russell		X
Hughes, John L.		X
Hughes, Judy A.		X
Hughes, Richard A.	X	
Hughes, Virginia		X
Huht, Leonard		X
Huhta, Carl W.		X
Hull, Edre L.	X	
Hull, Ivan		X
Hull, Kelly R.	X	
Hull, Pamela	X	
Humage, Rebecca		X
Hume, Ron	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Humphrey, Evelyn	X	
Humphrey, Kenneth A. Jr.	X	
Humphrey, Laura J.	X	
Humphrey, Raymond L.	X	
Humphreys, Curtis & Belva		X
Hundhammer, Mark	X	
Hunt, Carrie	X	
Hunt, Leslie		X
Hunter, Janet		X
Hurd, Bryan	X	
Hurd, Peggy	X	
Hurlock, Tom	X	
Hurst, Howard	X	X
Huston, Joe	X	
Hutchings, Nancy J.		X
Hutten, Jeffrey K.	X	X
Huxley, William	X	
Iannelli, August	X	
Iannelli, Todd A.	X	
Ingram, James B.	X	
Ingram, James R.	X	
Irons, Richard R. (Dr.)	X	
Isaacsen, Douglas	X	
Iskell, C. M.		X
Ivers, Thomas G.	X	
Iverson, Dennis	X	
Iverson, Robert		X
Jackman, Cindy		X
Jackson, Richard	X	
Jacob, Mary		X
Jacobs, Kathryn		X
Jacobsen, Bettie		X
Jacobson, Audrey	X	
Jacobson, Jodi		X
Jacobson, L. Kim		X
Jacobson, Maurice D.		X
Jacobson, Rene		X
Jacobson, Sue	X	
Jakovac, Tony		X
James, Ron	X	
Jameson, Brian		X
Janes, Janelle		X
Janke, Daniel A.		X
Janke, Terry		X
Jans, Bridget	X	
Janson, Reuel G.		X
Jarnevic, Michael W.		X

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Jarrett, Charlotte L.		X
Jarvi, Patricia L.	X	
Jellison, Paula	X	
Jellum, Dorothy	X	
Jenkins, Kurt	X	
Jenson, Wayne	X	
Jette, Barney	X	
Jette, Dennis W.		X
Jette, Evelyn D.		X
Job, Albert	X	
Johns, Jack J.	X	X
Johns, Jeff		X
Johns, Rebecca L.		X
Johnson, Al		X
Johnson, Ann	X	
Johnson, Bonnie		X
Johnson, Brian J.	X	
Johnson, David		X
Johnson, Eugene J.	X	
Johnson, Gene	X	
Johnson, Gordon N.	X	
Johnson, Howard	X	
Johnson, Jeff	X	
Johnson, Jerry		X
Johnson, John D.	X	
Johnson, Joyce, Julie, Jeff, & Fred	X	
Johnson, Kent R.		X
Johnson, Lester		X
Johnson, Linda		X
Johnson, Linda M.	X	X
Johnson, Marise (Dr.)		X
Johnson, Mary	X	
Johnson, Maurice R.	X	
Johnson, Merlin H.	X	
Johnson, Neil E.	X	X
Johnson, Paul K.		X
Johnson, Peggy	X	
Johnson, Ronald H.	X	
Johnson, Sara R.		X
Johnson, Susan		X
Johnston, Tana	X	
Jolin, Wesley & Marion	X	
Jones, Allen	X	
Jones, Cedron		X
Jones, Dennis		X
Jones, Dennis O'Neil		X
Jones, Donald R.	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
	X	
Jones, Edward S.	X	
Jones, Elinor G.		X
Jones, James L.	X	X
Jones, Jefferson & Elinor	X	
Jones, John R.	X	
Jones, Karen		X
Jones, Kevin		X
Jones, L. Kaye		X
Jones, Nora		X
Jones, Norman & Margaret	X	
Jones, Orrie V.	X	
Jones, Robert W.		X
Jones, Sherry	X	
Jordan, Bob		X
Jordan, Gil		X
Jordan, Mel		X
Jordt, Lester	X	
Jorgenson, Carla F.	X	
Jorgenson, John L.		X
Jory, Tom	X	X
Joslin, Robert		X
Journey, Alfred E. "Bud"		X
Joy, Arden E.	X	X
Jump, John	X	
Jump, Kevin	X	
Jurgens, Ann		X
Kaber, Claude	X	
Kachmann, Willard		X
Kada, Carolyn	X	
Kahn, Carlene	X	
Kaiser, Lane		X
Kaiseuhi, Tom	X	
Kalanick, Gene & Leslie		X
Kapelanczyk, Frank R. Jr.	X	
Karaffa, Julie	X	
Karaffa, Metro & Kathryn	X	
Karli, Darrell	X	
Kartheiser, Nick	X	X
Kartheiser, Yvonne	X	
Kasberg, Walter	X	
Kauffman, Jimmie R.		X
Kavanagh, William		X
Kaye, John B.		X
Keane, Leo		

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
		X
Kearney, Lone	X	
Keiffer, Cindy		X
Keis, Richard B.		X
Kelch, Everett	X	X
Keller, Charles E.	X	
Kellogg, Paula		X
Kelly, Alan		X
Kelly, Conny		X
Kelly, Lesley	X	X
Kelly, Lynn		X
Kelly, Margery	X	
Kelly, Patrick G.	X	X
Kelly, Steven	X	
Kemp, Betty Jane		X
Kenelty, Keith		X
Kenelty, Sheila		X
Kennedy, Dawn V.		X
Kessler, Mark		X
Ketcher, Michael P.		X
Ketcher, Sis	X	X
Kezar, Geraldine "Bebe"		X
Kiel, Carol		X
Kim, George	X	
Kimbrough, Dan G.	X	
Kimbrough, Richard D.		X
Kimmet, Teresa		X
Kindt, Sandy		X
King, John E.		X
Kinkade, Randy		X
Kinkade, Virginia		X
Kinkade, W. E.	X	
Kinney, Albert A.		X
Kinniburgh, Jerry		X
Kinyon, Barry		X
Kinyon, Cheryl	X	
Kinyon, Duane S.	X	
Kirchmyer, Susan		X
Kirkpatrick, Joan		X
Kirkpatrick, John R.	X	
Klawitter, Mark R.	X	X
Klawitter, Ralph	X	
Klein, John	X	
Klein, Terry A.		X
Klemundt, John M.		X
Klenk, Gordo		

G. INDIVIDUALS (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Knight, J. L.		X
Knox, Eugene R.		X
Knudson, E. A.		X
Knutsen, Glade	X	
Knutson, John S.	X	
Kobasziar, Julian		X
Kobylenski, Leonard		X
Kochis, Laura		X
Koenig, Del	X	
Kohans, Hope		X
Kohl, Dayla S.		X
Kohrt, Sara	X	
Kolar, Karen		X
Konopatzke, Steve	X	
Konshur, William D.		X
Koors, Kathleen		X
Kopitzke, Gene	X	X
Kortuem, Robert		X
Koski, Ron		X
Kramer, Raymond J. (Mr. & Mrs.)		X
Kranitz, Eugene R.	X	
Kranz, James R.	X	
Kreck, Loren L. (Dr.)	X	X
Kreck, Mary R.		X
Kriz, Jean R.	X	
Kronberg, Scott	X	
Krueger, DeWayne R.		X
Krueger, Gloria	X	
Krueger, Jean C.		X
Krueger, Jennifer		X
Krug, Rod		X
Kuehnle, Dyna	X	
Kuhl, Richard A.	X	X
Kuhs, Donna		X
Kunda, Ralph	X	
Kuntz, Sandy	X	
Kvamme, Lief	X	
LaBar, Kenneth	X	
LaBelle, Eugene H.		X
LaRoque, Gretchen		X
Lacanz, Charlie		X
Lacher, Jack G.		X
Ladenburg, Charles J.		X
Ladenburg, Jennie M.		X
Ladenburg, John		X
Ladenburg, Mark		X
Ladenburg, Tom		X
Ladenburg, William		X
Laird, Steve M		X
Lake, LeRoy D.	X	
Lakes, Mike	X	
Lalim, Randy		X
Lamar, Sharon	X	X
Lamar, Steve	X	X
Lamoreaux, Ron	X	
Lamping, Darrell		X
Lamping, Ken		X
Lamping, Lauretta		X
Landry, Clarisse	X	
Lane, Brian J.		X
Lane, K. C.		X
Lane, Lorraine	X	
Lane, Marcia		X
Lane, Mel		X
Lane, Venetta "Vicki"		X
Lane, Virg		X
Lanfear, Bobby R.	X	
Lang, Joseph T. (Mrs.)		X
Lang, Kevin		X
Lang, Michael	X	X
Langstaff, John	X	
Langton, Myrtle	X	
Langton, Ted	X	
Lape, Joyce	X	X
Lapp, Joyce A.	X	X
Larsen, Garry E.	X	
Larsen, Ted	X	
Larson, Calvin	X	X
Larson, David R.	X	X
Larson, Elsie M.	X	
Larson, Larry N.	X	
Larson, LeRoy	X	X
Larson, Linda		X
Larson, Michelle R.		X
Larson, Thelma		X
Latterell, Fayette		X
Laughlin, John	X	
Launer, Charles E.	X	
Lawrence, Paulette		X
Lawson, Ann		X
Lawson, Darron B.		X
Lawson, Jerry L.		X
Lawson, Karen L.		X
Layhern, Curt		X
Lazar, Michelle	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Lazo, Marilyn M.		X
LeBrun, Clifford R.	X	
Leck, David E.		X
Leck, Shirley		X
Lee, Eugene P.	X	X
Lee, Michael J.	X	
LeGlatin, Marie Keis		X
Lehman, Delroy	X	
Leiger, Clifford	X	
Leighty, Andy L.		X
Leighty, Una		X
Leisken, Jim		X
LeMieux, Carynn		X
LeMieux, R. A.		X
Lenoch, Thomas	X	
Lenz, R.	X	
Leonard, Gail Ann	X	
Leonard, Mary		X
Leonard, Pat		X
Leprohon, Angie	X	
Lerck, Bob W.	X	
LeRoque, Rocky	X	
Leslie, Clinton	X	
Leubner, John J.	X	
Lewellen, Jerry	X	
Lewin, Stuart F.		X
Lewis, Deborah		X
Lewis, Jim R.	X	
Lewis, Roscoe & Valee	X	
Lidstrom, Mark		X
Lietz, Donald O. Jr.	X	
Lindbergh, Susan M.	X	
Linderman, Pat	X	
Lindgren, Steve		X
Lindsey, Roy		X
Linn, John Charles		X
Lippy, George A.	X	
Lippy, Jim	X	
Liston, Bob		X
Liston, Melanie S.		X
Littman, Peter	X	
Llescr, Jeff	X	
Loberg, Greg		X
Lodinoff, Glynis		X
Logan, Leon D.		X

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Logsdon, Henry		X
Lohn, David	X	
London, Claire C.		X
Long, David		X
Long, Michael D.		X
Long, Susan		X
Longfield, Tom	X	
Lonis, Paulette		X
Love, James E.		X
Love, Kennie	X	
Love, Robert L.		X
Loveless, William V.	X	
Lovering, Harry	X	
Lowe, Cheryl J.		X
Lowitz, Hilbert & Isabelle	X	
Lubbers, Frederick G.	X	
Luce, Donald A.	X	X
Luce, Judy		X
Luce, Warren	X	
Lucke, Robert & Lavonne		X
Luckow, Kyle	X	
Ludeman, Wayne		X
Lund, Rita		X
Lundstrom, Richard D.	X	
Lyford, Dan	X	
Mac, Susan		X
Mackaman, Larry, Jeff, & Dixie		X
Mackey, Roy A.		X
Mackin, Mark		X
MacLean, Delores	X	
MacLeod, John D.		X
Madison, Peter L.	X	
Maetzold, Charles		X
Magaddino, Robin, Joseph, & Angelina		X
Magone, Larry	X	
Mahugh, Bonnie		X
Majernik, Carla		X
Major, Helen		X
Makashio, Moriko		X
Malarchick, Catherine L.		X
Malicoat, Violet		X
Malott, D. V.		X
Manson, Robert & Debbie	X	
Markin, Duane A.		X
Marks, Edward L.	X	X
Martens, Wayne L.	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Martin, Alice		X
Martin, Bill		X
Martin, Joyce		X
Martin, Katherine		X
Martin, Ronald & Lilli Ann	X	X
Martin, Tim	X	
Martin, Tom		X
Martin, Wayne		X
Martineau, Fred		X
Martineau, Linden P.		X
Marty, Louie	X	
Marvel, Bill & Cathy		X
Marx, Ann		X
Marx, Ron		X
Mason, Lynn		X
Matchett, Marc R.		X
Mateka, Elwyn L. (Mr. & Mrs.)	X	
Mathiason, Jim	X	
Matthews, J. Pauline		X
Mattson, Carol		X
Mattson, Frances	X	
Mattson, Kenneth	X	X
Mattson, Randy	X	
May, Robert R.	X	
McAllister, Betty	X	
McAllister, Kenneth	X	
McAllister, Sam		X
McAllister, Sam (Mrs.)		X
McAlpine, Alan		X
McAlpine, Daryl L.		X
McAlpine, Kelly		X
McAlpine, Ricky		X
McAlpine, Stephanie		X
McAlpine, Thomas P.		X
McArthur, James	X	
McBride, Carolyn S.		X
McBride, Kim		X
McBurney, Bertha M.	X	
McBurney, Lennard R.	X	
McCaffree, Dan	X	
McCaffree, Dan (Mrs.)	X	
McCaffree, Paula	X	
McCall, Gary		X
McCartney, Earl D.		X
McCartney, Ward B. III		X
McCauley, James C.		X

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
McClain, Thomas W.	X	
McClanahan, Floyd V.	X	X
McClelland, B. Riley	X	
McClelland, Pat		X
McClintock, Ken		X
McCluskey, Steve		X
McClusky, Kim		X
McConnell, Sheila A.		X
McCormick, Daniel M.	X	X
McCracken, Donald		X
McCracken, Jeff		X
McCubbins, Floyd W.		X
McCully, Bud	X	
McGlenn, A. E.	X	
McGrath, Jack		X
McGregor, Scott		X
McGrew, Michael J. & Nancy	X	X
McGriff, C. P. Jr.		X
McGriff, Virginia		X
McIlhargey, Larry	X	
McIntosh, John D.		X
McIntyre, Dan	X	
McIntyre, Jill	X	
McKay, Don W.	X	
McKay, Donald J.	X	
McKelvey, Mavis R.	X	
McKinley, Mark A.	X	
McKinney, Billy R.	X	
McLinden, Alan		X
McMannamy, Reynold		X
McManus, William D.		X
McMurtrey, Bryan E.	X	
McNamee, Thomas		X
McNaught, David		X
McNulty, Don & Diane		X
Meeks, John F. "Tim"		X
Meilsen, Stanley	X	
Meis, Richard R.	X	X
Melander, Timothy J.	X	
Melby, Cheri		X
Melby, Steve		X
Mendenhall, Dean		X
Mersman, Ross E.	X	
Merson, David C.	X	
Meuli, Deborah L.	X	
Meuli, Debra S.	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
	X	
Meuli, Edwin R.	X	
Meuli, Lori	X	X
Meuli, Marvin L.		X
Meuli, Marvin L. (Mrs.)	X	
Meuli, Selmer		X
Meyer, Catherine J.		X
Meyer, Curt		X
Meyer, Neil L.		X
Meyer, Rolane	X	
Meyers, Ed & Barb		X
Meyhan, S.		X
Michels, Allen T.		X
Michels, Karen		X
Michils, Omar	X	
Miles, Victor M.	X	
Miller, Betty		X
Miller, Bill	X	
Miller, Daniel	X	
Miller, Doug		X
Miller, Joe	X	
Miller, Jon		X
Miller, Margie L.	X	
Miller, Ray	X	
Miller, Rod		X
Miller, Ronald (Dr.)	X	
Miller, Susan	X	
Milner, Clao	X	
Missman, Bruce E.		X
Mitch, Don	X	X
Mitchell, D. Brent		X
Mitchell, Kay		X
Mitton, Terry	X	
Moderie, Richard L.	X	
Moghon, George		X
Mohler, Melvin	X	
Mohn, Marvin		X
Mohr, Craig		X
Mohr, Mike		X
Moller, Patsy		X
Monforton, Jean	X	
Monger, Kathryn	X	
Moonen, Alvin		X
Moore, Elden L.		X
Moore, Monica A.		X
Moore, Peter		

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
		X
Moore, Rick		X
Moore, Sheila	X	X
Moore, William "Bud" & Janet		X
Mordahl, Gary B.		X
Morehouse, Doug		X
Morehouse, Josh		X
Morehouse, Karen		X
Morehouse, Kari		X
Morey, Rene		X
Morey-Menke, Suzanne		X
Morgan, Beth	X	
Morgan, Elizabeth L.	X	
Morgan, John R.	X	
Morigeau, Ronald T.		X
Morin, Marie		X
Morin, Richard T.		X
Morine, Jay A.		X
Morkert, Walter C.	X	
Morley, Chuck	X	X
Morley, Gregory H. & Anne	X	
Morley, Steve	X	
Morran, James D.		X
Morrison, Gigi		X
Morrow, Brent		X
Morse, Barton		X
Mortensen, Cathe		X
Morton, Don (Mr. & Mrs.)		X
Moulton, Larry		X
Moulton, Rhoda		X
Moulton, Thomas A.		X
Muehlberger, Robert E.		X
Mueller, Paul A.	X	
Murks, Moyer		X
Murphy, Colleen		X
Murphy, Ellyn		X
Murphy, Laurel		X
Murphy, William H.		X
Murray, Ester	X	
Murray, Marshall		X
Murray, Suzanne J.	X	
Musch, Brad	X	
Mustard, Isabella M.		X
Muston, Kathy & Dave		X
Muth, Bob		

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On	
	1983 DEIS & Plan	1984 DEIS & Plan Supplements
Myers, Mason		X
Myers, Merle		X
Myers, Michael A.		X
Myron, Jim		X
Nace, Helen	X	
Nadeau, James V.	X	
Nadeau, M. Steven		X
Naples, Andrea		X
Nash, Edward R.		X
Nault, Wendy	X	
Neether, Cy	X	
Nelsen, Clay	X	
Nelsen, Gordon V.		X
Nelson, Allen		X
Nelson, Arnold	X	
Nelson, Belinda		X
Nelson, Conrad G.	X	X
Nelson, Dick	X	
Nelson, Fred & Lloyd		X
Nelson, Geraldine		X
Nelson, Joel A.		X
Nelson, Larry A. (Mr. & Mrs.)		X
Nelson, Leonard	X	
Nelson, Lowell		X
Nelson, Nicole		X
Ness, Colleen	X	
Ness, Timothy James	X	
Netzorg, Leonard B.	X	
Newberry, H.W.C.		X
Newcomb, Pat C.	X	
Newman, Gyda		X
Newman, James D.		X
Newman, James H.		X
Newman, Joe		X
Newman, Robert H.		X
Newman, William J.		X
Newton, Edna L.	X	X
Newton, Merlin	X	
Newton, R. Eugene		X
Newton, Ronald A.	X	X
Nezat, Jerry (Mr. & Mrs.)		X
Nicholls, W. J. (Mr. & Mrs.)	X	
Nichols, Bryan		X
Nickol, Simon B.		X
Nielsen, John H.	X	
Nielsen, Judith		X
Nieman, Wm. B.	X	
Nimeil, David A.	X	

Commenter	Comments Received On	
	1983 DEIS & Plan	1984 DEIS & Plan Supplements
Nish, Carole		X
Nixon, Ray H.		X
Nixon, Shirley M.		X
Noble, Jeff	X	X
Nobles, E. Terrill		X
Nobles, Lawrence		X
Noel, Gerald J.		X
Noel, Jim	X	
Noel, Raymond	X	
Noland, Eileen & Robert	X	
Nordtome, Joseph	X	
Norman, Doug		X
Norman, Kim E.		X
Norris, Abbott L.	X	X
Norris, Jacky R.		X
Norris, Maggy		X
Norton, Corey		X
Noyd, L. C.	X	
Nugent, Laura M.		X
Nunn, Johnny R.	X	
Nurrisco, Claudia	X	
O'Boyle, Patty		X
O'Brien, Louie D.		X
O'Brien, Mary & Dan		X
O'Brien, Sean	X	
O'Connell, Nancy		X
O'Connor, Susanne M.	X	
O'Leary, Malcolm		X
O'Neal, Steve (Mrs.)		X
O'Neil, Charlene M.		X
O'Neil, Charles H.		X
O'Neil, Ivan		X
O'Rourke, Joseph	X	X
Ober, Michael J.		X
Oberlitner, John		X
Obray, Gay		X
Ocherider, Paige	X	
Ogg, R. K.		X
Ogle, Carol		X
Ogle, Dennis		X
Ohs, Dennis		X
Okonski, Jerry P.		X
Olason, Matt		X
Oliver, Dennis		X
Oliver, Doug	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Olmsted, Chris	X	
Olmsted, William L.	X	
Olsen, Lance		X
Olson, Dawn & Glen		X
Olson, Derek	X	
Olson, James W.		X
Olson, Marty L.		X
Olson, Michael K.		X
Olson, Terri		X
Ontko, Elizabeth E.		X
Opalka, Bruce		X
Orchard, Mike	X	
Orndorff, Brian R.	X	
Orr, Tim	X	
Orsow, Tony	X	
Ortega, Marcela		X
Oset, Robert D.		X
Osler, Dennis G.	X	
Osler, Jeanne		X
Ost, Fred		X
Otto, Glenn	X	
Ottosen, Donavan S.	X	
Ottwett, Byron J.	X	
Ouellette, Greg	X	X
Outcalt, Ralph		X
Owen, Barbara A.		X
Owen, Tom E.		X
Owens, Chris		X
Owens, John M.	X	
Owens, Ray W.	X	
Pachero, John E.	X	
Page, Kristin	X	
Page, Wallace L.		X
Pagliuso, Lorraine	X	
Paliga, Nick		X
Paloll, Rodney A.		X
Pannell, Marylane		X
Parker, Charles D. (Mr. & Mrs.)		X
Parker, Jim		X
Parker, Mel		X
Parker, Michael (Mrs.)		X
Parker, Ronald J.	X	
Parker, Tom		X
Parr, Dwight		X
Parr, Randall T.		X
Parr, Sara S.		X
Pasquesi, Bruce		X

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Passmore, Scoop		X
Patterson, Lew		X
Paullin, Howard		X
Paulsrud, M. H.		X
Payne, Ed		X
Payne, Kenneth		X
Payne, Mark G.		X
Pederson, Holger		X
Pederson, Jan		X
Peeso, Fritz	X	
Peet, Duffy		X
Pellett, Bob		X
Pellett, Yvonne		X
Percival, David		X
Peretiako, Michel		X
Perkovich, Francis & Katherine		X
Perrine, Michael		X
Perry, Barbara		X
Perry, R. L.	X	
Person, John E.		X
Personett, James		X
Persons, Clifford O.		X
Peters, Harvey & Kristi	X	
Peterson, Brian		X
Peterson, Darrel	X	
Peterson, Dean	X	
Peterson, Dennis R.	X	
Peterson, Donald K.		X
Peterson, Duane	X	
Peterson, E. G.		X
Peterson, Mary Lou		X
Peterson, Phyllis M.	X	
Pettigrew, John		X
Pettigrew, Karen		X
Pettis, J. K.		X
Petts, Jack		X
Phelps, James	X	
Phillips, Bob	X	
Phillips, Debbie		X
Phillips, Mary		X
Phillips, Phil		X
Phillips, Robert		X
Piche, Elaine		X
Pierce, David		X
Piersall, Margie & Bob	X	X
Pierson, James E.	X	
Pilatti, Pete E.	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Pilling, Helen		X
Pilny, Charles F. Jr.		X
Pine, Timothy	X	
Ping, Barbara A.		X
Ping, Scott C.		X
Pinkney, Colleen		X
Pinkney, Heidi		X
Pinkney, Talula		X
Pinkney, William C.		X
Pinter, Kim		X
Piper, Howard	X	
Piper, John H.	X	
Pirker, Dave		X
Pirker, Lois I.		X
Pittman, Linda & Carl	X	
Pluid, John T. (Mr. & Mrs.)	X	
Pomeroy, Asa G.	X	
Poncelet, Nick	X	
Poole, Robin	X	
Porcarelli, Mike		X
Posner, D. Dustin		X
Postlethwaite, Rita		X
Postlethwaite, Robert D.		X
Potoczny, Joe		X
Potter, Charles J.	X	
Potter, Rachel	X	X
Potter, Robin S.		X
Potuzak, Rick	X	
Powell, Eric		X
Powell, Melvin F.	X	
Powell, Robert E.		X
Powell, Wayne	X	
Powell, William		X
Presnell, Donald A.		X
Presnell, Kyla		X
Presnell, Vicki L.		X
Price, Clayton & Bonnie		X
Price, Gordon I.		X
Prichard, Dale	X	
Pridmore, Donna Jo		X
Pritchard, Garfield C.		X
Pritchett, Nell & Fred	X	
Probert, Edwin L.	X	
Proefrock, Kenneth L.		X
Prother, Walter W.		X
Puckett, Karel		X

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Putzier, Pete		X
Pyatt, Walter	X	
Quande, Harold		X
Quigg, John		X
Quilling, Bill	X	
Quimby, Lonny		X
Quiram, Bonnie		X
Quiram, Harold	X	X
Quist, Bonnie & Robert	X	
Rada, Ken	X	X
Radish, Dennis L.	X	
Raemaeker, Ken		X
Raemaeker, Robert		X
Raemaeker, Sharon A.		X
Raible, Kalin		X
Raiman, Carol		X
Raiman, Mike G.		X
Ralley, William		X
Ralphs, Dana & Deb	X	
Ramsey, Chris W.	X	
Rand, Raymond E.	X	
Rantala, Rodney		X
Rasmussen, Ed		X
Rasmussen, John E.		X
Rasmussen, Martha		X
Rasmussen, Vivian C.		X
Rathbun, Denver D.	X	
Raymond, Nicholas	X	
Rayome, Judy		X
Rayome, Kenneth D.		X
Rayome, Leslie		X
Rayson, Arden K.		X
Rayson, Clayton R.		X
Rayson, Kurt K.		X
Read, Donald J.		X
Reagan, McClure		X
Reardon, Elaine		X
Redd, G. B.	X	
Reddig, Bill & Lynne		X
Redmond, Francis S.	X	
Reed, Don	X	
Reed, Jerald F.	X	X
Reese, Rich		X
Reeve, Sara		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
	X	
Reeves, Karen		X
Reichhoff, Lin		X
Reick, K. G.		X
Reid, Michael T.		X
Reis, Michael P.	X	
Remillard, Archie	X	
Rene'		X
Rentschler, Barbara		X
Resser, Charles A.		X
Reyling, Joe		X
Reynolds, Alan	X	X
Reynolds, Don	X	
Reynolds, Lester & Phyllis	X	
Reynolds, Omar B.		X
Reynolds, R. W.	X	X
Rhodes, Douglas		X
Rhodes, Duane	X	
Ricards, David		X
Rich, Jack C.		X
Rich, Janis		X
Rich, Kathryn		X
Richards, Candis C.		X
Richards, David	X	
Richards, George D.		X
Richards, Peggy		X
Richardson, DeeAnn	X	
Riche, C. B.		X
Richmond, Janet		X
Richmond, Kevin	X	
Rideout, William	X	
Rider, Robert D.		X
Riebe, Allen		X
Riedlinger, Joan & Martin		X
Riettel, Tony		X
Riggles, Dale		X
Riggles, Suzanne		X
Rikert, Kenneth	X	
Riley, Harry	X	
Riley, Mason G.	X	X
Riley, Richard D.	X	X
Rinck, Bill & Vicki		X
Ringquist, Barbara		X
Ringquist, Daniel J.		X
Rinke, Robert		X
Rister, Richard		X
Ritter, Donna L.		X
Roberts, F. Gary		

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
		X
Robertson, Diana		X
Robertson, Winslow	X	
Robinson, David R.	X	
Robinson, Dick	X	
Robinson, Frances		X
Robinson, Joe	X	
Robinson, Loren		X
Robinson, Loy		X
Robinson, Robert & Karen	X	
Robison, Glenn A.		X
Robison, Karen		X
Roche, William M.		X
Rockwell, David		X
Rodwick, John		X
Rody, John W.		X
Rogers, Glenn E.		X
Rogers, James	X	
Rogers, Kenneth P.		X
Rogers, Robert E.	X	
Rohletter, Robert E.	X	
Rohm, Frank	X	
Rohrman, Charles	X	
Role, Richard		X
Rolette, James L.		X
Rolfing, Steve		X
Roll, Charles W.		X
Roll, Ruth R.	X	
Rollins, Arvil	X	
Rollins, Eileen M.	X	
Rolston, Walter	X	
Romain, Beth, Keri, Kathy		X
Romine, Joanne	X	
Roo, Ernest A.	X	
Roo, Jean E.		X
Roosendahl, Carole B.		X
Roosendahl, T.	X	X
Root, Gary		X
Roper, Bill C.		X
Rose, Daniel R.		X
Rose, Karla		X
Rosetta, Irene B.		X
Rosiejka, Frank	X	
Rosse, Francis		X
Rost, Bernice	X	
Roush, Rodney E.		X
Rowe, Sam		

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Royer, Suzanne	X	
Rubin, Larry G.		X
Rucinski, Anthony		X
Ruddle, Kathy		X
Rude, Robert M.	X	
Rundle, Craig	X	
Rundle, John D. & Betty	X	X
Rundle, Robert B. & Marcia B.	X	
Rundquist, Karin		X
Rundquist, Lynne	X	
Rundquist, Roger W.		X
Ruppel, Phil		X
Rushford, Jeanette		X
Russell, Anne	X	
Russell, Michael C.		X
Russell, Sally Cameron		X
Ruth, John		X
Ruzicka, Charles		X
Ryan, Wayne	X	
Ryffel, Erna A.	X	
Sachse-Brown, Pat		X
Sakahara, Gary	X	X
Salandi, Patrick	X	
Salminen, Don (Mr. & Mrs.)		X
Salter, Fred H.		X
Salzman, Ethel		X
Salzman, Robert		X
Sammons, Chet		X
Sammons, Herb		X
Sammons, Lisa		X
Sammons, Phyllis		X
Sammons, Roger		X
Sammons, Yvonne		X
Sampson, Wade	X	
Samson, Fred	X	
Samuelson, James N. (Mr. & Mrs.)	X	
Sand, Bernadette M.		X
Sandefer, Michael D.	X	
Sanders, Billy J.	X	
Sanders, Carl S.	X	X
Sanders, George R.		X
Sands, F. Myrtle	X	
Santa, Scott		X
Sargent, L. R.		X
Sartori, Fern	X	
Satterlee, Royce		X

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Sauerbier, Neil	X	X
Saurey, Wayne G.	X	
Schacker, Kenneth C.	X	
Schaefer, H. J.		X
Schaefer, Linda M.		X
Schaffer, Darold R.		X
Schatz, Nanne		X
Schaub, Jerry		X
Schaub, John B. (Mr. & Mrs.)	X	
Schaub, Joyce	X	
Schell, Paul		X
Scherer, Arthur T. (Dr.)		X
Schill, Judith R.		X
Schlegel, Bill		X
Schlegel, Leslie & Mary		X
Schlegel, Louis W.		X
Schlegel, Vickie		X
Schliep, Robert & Barbara		X
Schmid, John		X
Schmidt, Jack		X
Schnee, Harley L.		X
Schnee, Shirley D.		X
Schneider, Gene		X
Schneider, Rela T.		X
Schoenthal, Shane W.	X	
Scholl, Donna		X
Schoonover, Daniel W.	X	
Schott, Joseph C.	X	
Schotz, Ron		X
Schraeder, Daniel C.	X	
Schrade, Dorothy	X	
Schrade, George	X	
Schreiber, Herman (Dr.)	X	
Schrock, Gary D.	X	
Schroeder, L. G.		X
Schwegel, Arthur W.	X	
Schwegel, Frank R.		X
Schwegel, Tom	X	
Scott, Carol		X
Scott, Charles C.	X	
Scott, Eugene F.	X	
Searah, Norman		X
Sedivy, Clifford L.	X	
Sedlack, Elaine	X	X
Seidel, Bob		X
Selyem, Leslie		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	Comments Received On 1984 DEIS & Plan Supplements
Senger, John M.		X
Serna, Joanne		X
Serna, Salvador		X
Serrette, Ralph A.		X
Servenwine, Owen (Mrs.)	X	
Seteley, Calvin	X	
Seth, Leroy L.		X
Seubert, Richard F.		X
Seubert, Russell M.		X
Sevesind, Gary W.	X	
Sevesind, William	X	
Sewell, Tom R.		X
Seymour, James R.	X	
Sharp, Carl R.	X	
Sharp, Ray	X	
Shauler, Rosella	X	
Shaurette, L. Dexter		X
Shaw, Keith		X
Shaw, Norman W.	X	
Sheehan, Connie	X	
Sheely, Susan		X
Sheely, Tom		X
Shelly, Steve	X	
Shelmerdine, Stanley G.		X
Shepard, Brad		X
Shepard, Keith C.	X	
Sherman, N. S. & Virginia	X	
Sherman, Richard C.		X
Shero, Randy	X	
Sherwood, Gaylord	X	
Shield, Steven	X	
Shoemaker, Stanley P.	X	
Shog, Sal		X
Short, Jack	X	
Shupert, Daniel M.	X	
Siebrecht, Gloria		X
Siebrecht, Odell		X
Sievers, Richard D. & Janice		X
Silverstein, David		X
Simmons, Dennis Nettik		X
Simmons, Mari	X	
Simmons, Morris R.		X
Sinacola, Dennis		X
Singleton, George	X	
Skare, Betty		X
Skare, Orlin		X

Commenter	Comments Received On 1983 DEIS & Plan	Comments Received On 1984 DEIS & Plan Supplements
Skog, Sally		X
Skoog, Fred		X
Skyberg, Kris		X
Skyberg, Rick		X
Slater, Glenn A.		X
Sliter, Everit A.		X
Sloan, James G. & Mary	X	X
Slocum, Nancy E.		X
Smith, Claude C.	X	
Smith, David		X
Smith, Dean	X	
Smith, Dick		X
Smith, Edward C.	X	
Smith, Geraldine	X	
Smith, Jennifer S.		X
Smith, Shannon		X
Smith, Tuffy	X	
Smith, Wendell		X
Smithson, Earl		X
Smude, Diane		X
Smude, Terry L.		X
Smyers, William Jr.	X	
Smythe, Carolyn	X	
Snow, Glen R.		X
Snyder, Bradley T.		X
Snyder, Chuck	X	
Snyder, Dick & Betty	X	
Snyder, Elaine F.	X	X
Snyder, Frank A.		X
Snyder, Franklin (Mr. & Mrs.)		X
Sobelleger, M.	X	
Solum, Alan	X	
Sommars, Jack		X
Sonder, Robert W.	X	
Sood, Carolyn M.		X
Sorensen, Ina Mae		X
Sorensen, Kris	X	
Sorensen, Wade P.		X
Souhrada, Kathy		X
Sourbeer, Wayne		X
Sparkman, K. J.		X
Spear, Mary		X
Speck, E. Carroll		X
Speelman, John		X
Speer, David T.		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Spencer, Hanna		X
Spencer, Phillip		X
Speto, Charles	X	
Spettigue, Betsy		X
Spratt, Marc	X	
Sproul, Janet, Lewis, & Clyde		X
Stacy, William	X	
Stahlberg, Dan	X	
Stahlberg, Gerald		X
Stahlberg, Hattie		X
Stahlberg, Michael W.		X
Stanley, Leonard J.	X	
Stansberry, Garry	X	
Stapleton, John W.		X
Stapley, Norman, Ruby, Rick, Ross, Roland, Barton, Ellie		X
Starbuck, Wilford Q.	X	
Starkel, Walter	X	
Stathas, Edward		X
Stathas, Marilyn	X	
Stearns, Chuck	X	
Stearns, Lorene		X
Steedman, W. R.	X	
Steele, Gary		X
Steiner, Ted		X
Stentz, John C.	X	
Stephens, Richard E.		X
Sternhagen, Kate		X
Stewart, Bill		X
Stewart, Dale S.	X	
Stewart, Gordon L.	X	X
Stewart, James R.	X	
Stickney, Guy	X	
Stickney, Mike	X	
Stidmon, Rick & Linda	X	X
Stokes, George	X	
Stolpa, Michelle		X
Stoltz, James		X
Stoltz, Louis Gene		X
Stoltz, Mike	X	
Stompro, Eldon	X	
Stores, Anna M.		X
Stores, Cal		X
Strait, Dennis N.		X
Strand, Earl	X	
Strand, Lawrence & Arlene		X
Strean, John		X

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Streitmatter, Alan J.	X	X
Streitmatter, Elaine		X
Strieter, Muriel H. & Edgar H.	X	
Stringer, Shannon		X
Stringham, Jim		X
Stromswold, Robert & Jean	X	
Strote, Cathy		X
Strouse, Patricia	X	
Strowbridge, Eugene	X	
Strowbridge, Ken Jr.	X	
Strowbridge, Kenneth	X	
Struble, John	X	
Strunk, Charles	X	
Stubblefield, Kathleen		X
Sudan, Lois M.		X
Sullivan, Bertha M.	X	X
Sullivan, Carla J.		X
Sullivan, George		X
Sullivan, Pat		X
Sullivan, Roger		X
Sullivan, Vincent		X
Summers, William C.		X
Summerville, Rebecca		X
Sundh, Tony	X	
Sutherland, Richard L.	X	
Sutton, Ann L.		X
Svedt, Paul	X	
Sverdrup, Lawrence H.		X
Swallow, Wesley A.	X	
Swanlund, Louise		X
Swanson, Fred		X
Swanson, John R.	X	X
Swanson, Kathryn Olmnstead	X	
Swanson, Nancy		X
Sweeting, Randal K.	X	
Swenson, Art	X	
Swenson, Jerry		X
Swenson, Penne		X
Swenson, Richard L.		X
Swenson, Stuart W.	X	
Swift, David J. E.	X	
Swift, Dennis	X	X
Swift, Evelyn		X
Syness, John		X
Syvrud, Robert S. (Dr.)		X
Tabb, Walter C.		X

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
	X	X
Tannehill, Bruce		X
Tate, Bruce	X	
Tatum, James C.		X
Tatz, Janet	X	
Taylor, George A. (Mr. & Mrs.)	X	
Tebay, Kevin	X	
Tedrick, Robert W.		X
Teichman, C. Paul		X
Teliphman, Jerome		X
Terramin, Michael		X
Terry, Howard P.		X
Thacker, Edith		X
Thacker, Gary N.		X
Thacker, Mara		X
Therkelsen-Moore, Donna		X
Thesin, John		X
Thielman, Ed	X	
Thier, Timothy J.		X
Thingelstad, Dana, Debbie, Dan		X
Thomas, Frank	X	
Thomas, Joseph P.		X
Thomas, Richard		X
Thompkins, Greg		X
Thompkins, Jerry L.		X
Thompson, Dave	X	
Thompson, Jim		X
Thompson, Robert W.		X
Thompson, Terry L.		X
Thorn, John L. & Addie		X
Tibbetts, Jennifer		X
Tibbitts, Trevor	X	
Tidball, Keith M.		X
Tiffin, Lee O.	X	
Tilton, Richie		X
Timmons, Pat		X
Tjaden, Steven L.		X
Togni, Kathy		X
Tomasko, Doug & Penny		X
Tombrink, Barbara		X
Tomsheck, Arthur		X
Torgerson, Joyce	X	
Torpen, Chester	X	X
Tost, Dennis (Mr. & Mrs.)		X
Trablik, Philip E. & Rebecca		X
Trankle, Donald & Betty	X	
Treat, Howard R.		X
Trembus, Claudia		

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
		X
Tromp, Beverly		X
Trosclair, Denise	X	
Troup, Allen R.		X
Troyer, Ivan Jr.		X
Tuft, Lynne		X
Tuholske, Jack		X
Turnell, Roger A.	X	
Turner, Bob		X
Turner, George		X
Turner, Laurie A.	X	
Tutern, Stanley V.	X	
Tutt, Rolly II	X	
Twitty, Wesley A.		X
Underwood, Ardith		X
Unwin, John		X
Urquhart, James D.		X
Uteinger, Jim	X	
Vaerteishout, Clarence L.		X
Valencia, Susan		X
Valentine, Connie		X
Valett, H. Maurice		X
Van Alten, Bruce		X
Van Born, James L.	X	
Van Dort, Jon	X	
Van Hoy, Robert W.		X
Van Leuven, Kent		X
Van Leuven, Kent (Mrs.)	X	
Van Maanen, Eric	X	
Van Meter, Jerry (Mr. & Mrs.)		X
Van Rinsum, Francis		X
Van Rooy, Susan		X
Van Sickle, Peter S.	X	
Van Meter, Jerry		X
Vandeboit, Ron	X	
Vant Hull, Mary		X
Vaughn, Sandra		X
Vedovatti, Phil	X	
Veidt, Donald G.		X
Venters, Cynthia A.		X
Venters, David P.		X
Venters, Luke	X	
Viani, Susan & J.N.	X	
Vigen, Sherwood C.	X	
Virdell, Michael T.	X	
Vish, Howard	X	
Vistro, Charles		

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Vitale, Frank J.	X	X
Vonderohe, Larry James	X	X
Voreyer, Stan & Treva		X
Wade, Jesse	X	
Wagenknecht, Robert E.		X
Wagner, Allen	X	
Waite, James A.	X	
Waldt, Ralph		X
Walhood, Clarence	X	
Walhus, David E.	X	
Walker, Dallas	X	
Walker, E. Perot		X
Walker, James O.	X	
Wallace, Jeff		X
Wallace, Susan		X
Walling, Dorothy L.		X
Walling, William L.		X
Wallner, Alfred		X
Wallner, Valesco		X
Walter, Arnold	X	
Walter, Fern D.	X	
Walter, Michael A.	X	
Walter, Mildred F.	X	X
Walter, Virgil A.	X	X
Walzer, Martha		X
Walzer, Robert J.	X	
Wambach, Carl F.		X
Ward, Ferdinand R.	X	
Wardinsky, Doug		X
Ware, Michael S.	X	X
Warf, Fred M.		X
Warhol, Mark	X	
Warndt, Roger	X	
Warner, Jean		X
Warner, Joe		X
Warner, K. C.	X	
Warner, Russell		X
Warner, Will		X
Warren, Evelyn		X
Waters, Joel R.	X	
Watson, Paul C.		X
Watts, Cheryl	X	X
Weaver, Andrew		X
Weaver, Arthur & Barbara		X
Weaver, Donna		X

Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Weaver, James R.		X
Weaver, Randy		X
Webb, Vera		X
Webber, Douglas (Dr.)	X	
Wedum, Les	X	
Weed, Earl E.	X	
Weed, Kenneth L.	X	
Weiand, Don N.	X	
Weiand, Gloria M.	X	
Weinstein, Dan		X
Welch, Kathleen		X
Wenthold, DeWayne		X
West, Robert W.	X	
Westerlund, Les	X	
Westerlund, Lilly		X
Wetzel, Betty & Winston	X	X
Wetzler, Carl E.	X	X
Weydemeyer, Winton	X	X
Weyermann, George	X	
Wheeler, Roger		X
Whitaker, James		X
Whitbeck, Sandra		X
White, Andrew		X
White, Carol A.		X
White, David		X
White, Paul		X
Whitman, Marilyn		X
Whitney, Jack & Ursula		X
Wickham, Margaret		X
Wicks, L. Ray	X	X
Widener, George	X	X
Widhalm, Cathy		X
Widhalm, Mervin F.		X
Wieglow, Marjorie		X
Wiesner, Diann E.		X
Wilcomb, Kristy B.		X
Wilcomb, Shaun	X	X
Wilcoxson, Anita L.	X	
Wilke, Leonard	X	
Wilkerson, L. C.		X
Wilkerson, Marko		X
Wilkin, Matt		X
Wilkins, Richard B. (Mr. & Mrs.)		X
Willard, Alice G.		X
Willard, Robert		X
Williams, David Bruce	X	

G. **INDIVIDUALS** (continued)

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Williams, Frank "Skip"	X	
Williams, Gary		X
Williams, Judy K.		X
Williams, Ronald K.	X	
Williams, Terry L.	X	
Willis, F. Smith		X
Willis, James B. Jr.		X
Willis, Lucinda K.		X
Willis, Phillip (Mr. & Mrs.)		X
Wilsey, Marc		X
Wilson, Everett		X
Wilson, Harold	X	
Wilson, James D.		X
Wilson, Jan & Tom		X
Wilson, John		X
Wilson, Lloyd W.		X
Wilson, Richard C.		X
Wilson, Vangeline		X
Windauer, Robert P.	X	
Wing, Ed	X	
Winters, Carol	X	
Winters, Diana L.	X	
Wirkers, David	X	
Wise, Kenneth L.	X	
Wise, Paul		X
Wisehart, Natalie		X
Withrow, Emily Jackson		X
Woehler, Eric		X
Woessner, Bea		X
Wold, Chantel K.		X
Wold, Clay		X
Wold, Myrta A.		X
Wolfe, James C.		X
Wolfe, Joe		X
Wollan, Douglas L.		X
Wolleat, Steve K.		X
Wood, Dale G.	X	
Wood, Gary	X	
Wood, William	X	
Woodard, R. Alan	X	
Woodgerd, Wes		X
Woods, Charles F.		X
Workman, Charles A.	X	
Workman, Kevin W.	X	
Workman, Roger	X	
Worth, Donna L.		X

Commenter	Comments Received On 1983 DEIS & Plan	1984 DEIS & Plan Supplements
Worth, Jay		X
Worthington, Wayne	X	
Wynkoop, Loretta		X
Yanishevsky, Rosalind		X
Yates, Gary & Karla	X	X
Yates, Richard E.		X
Yates, Rick	X	X
Yaw, Helen E.		X
Yelinek, Michael R.		X
York, Corey		X
York, John		X
Yorkes, Charles	X	
Young, Jodi		X
Young, Kim K.		X
Yumming, Randy		X
Zackheim, Hugh	X	
Zakar, Serby		X
Zalum, Allen E.	X	
Zarnowski, Pete	X	X
Zell, Henry E.		X
Zell, Wanda		X
Zens, Blanche		X
Zens, Irma	X	
Zerbe, Sherri		X
Zulik, Raymond		X
Zundel, Donald & Kathleen	X	X
Zurfluh, Larry		X
Zwisler, Karen		X
Zwisler, Steven		X
Late Commenter		
Altomare, Deborah		X
Bergstrom, Carolyn		X
Bosworth, F. D.		X
Braun, Steven J.		X
Burkhart, Kathy		X
Chessin, Meyer (Dr.)		X
Coty, Milton A. Jr.		X
Craft, Nance		X
Cunningham, Bill		X
Dunne, William		X
Erickson, Leif		X
Fredlund, Dale		X
Furlong, Marion		X
Galles, Paula		X
Jacobson, Max		X

G. **INDIVIDUALS** (continued)

Late Commenter	Comments Received On 1983 DEIS & Plan	 1984 DEIS & Plan Supplements
Jousma, Susan E.		X
Keis, Richard B.		X
Knutsen, Glade		X
Kopp, Adolph Jr.		X
Krantz, Rick (Mrs.)		X
Krieg, George T.		X
Lape, Joyce		X
Launius, Linda G.		X
Laurens, Holly		X
LeGlatin, Marie Keis		X
Levin, Ed		X
McCool, Stephen F.		X
Minde, Archie P.		X
Moore, Steve		X
Morgan, Steve D.		X
Olson, James W. (Dr.)		X
Palmatier, Diane		X
Richards, Paul		X
Rundle, John D. & Betty		X
Rundle, Jorge & Marie		X
Schieber, Barry		X
Smith, David		X
Smith, Paul B.		X
Smith, R. E.		X
Snortland, Julie		X
Snortland, Rebecca L.		X
Tallman, Shannon		X
Thomas, Deborah		X
Togni, Kathy		X
Van Meter, Jerry (Mrs.)		X

LISTING OF AGENCIES, ORGANIZATIONS, GROUPS, AND INDIVIDUALS TO WHOM THE FINAL ENVIRONMENTAL IMPACT STATEMENT WAS SENT

AMOCO Production Co. (Denver, CO)
AMOCO Production Co. (Evanston, WY)
ARCO Exploration Company
American Timber Company
American Wilderness Alliance
Animal & Plant Health Inspection Service
Babb, Raymond F.
Barkley, Mr. & Mrs. Robert
Barrineau, Britt
Bartel, Rick L.
Beck, Ed
Bjorsness, A. L.
Blackfeet Tribal Business Council
Blackfeet Tribe
Bonneville Power Administration
Braden, Byron
Bruno, Louis
Buentemeier, Ronald & Barbara
Bukantis, Robert
Burkhart, Paul
C.H.E.C.
Cabell, Gary J.
Carlton, D. C. "Jasper"
Carriles, Harry
Carter, Jack
Chaffin, Vicki
Champion International (Libby, MT)
Champlin Petroleum Company
Chase, John
Chase, Myron P.
Chevron, USA, Inc.
Chorney, Thomas
Collins, Randall C.
Colorado State University
Columbia Falls, City of
Columbia Falls City Library
Compass Exploration
Congdon, Wally
Conklin, Glenn H.
Conner, James R.
Continental Divide Trail Society
Crowe, Gary A.
Curtiss, Ronald & Patricia
Daily Interlake
Davis, Barbara
Defenders of Wildlife
Dempsey, Linda D.
DesRosier, Ed & Anne
Diamont, Ellen-Sue
Duemler, Paul
Edwards, Marty
Ensign, Dave
Environmental Impact Services
Environmental Protection Agency
(Denver, CO)
Environmental Protection Agency
(Helena, MT)
Environmental Protection Agency
(Washington, DC)
Equal Employment Opportunity Commission
Eureka Branch Library
Federal Aviation Administration
Federal Energy Regulatory Commission
Federal Highway Administration
Federal Railroad Administration
Flathead Basin Commission
Flathead County Library
Flathead Valley Community College
Flathead Wildlife, Inc.
Flood, Joseph
Fort Lewis College Library
Foust, John B.
Fuselier, Gary & Vickie
Garvin, Russ
General Services Administration
Glacier National Park
Gold Cup Exploration, Inc.
Goldsmith, Kenneth
Governor's Ad Hoc Review Committee
Grande Domain Retreats
Gratch, Alan S.
Great Bear Foundation
Gunderson, Kari
Hammer, Keith J.
Hammer, Wayne
Hannah, James N.
Hansen, Don
Hanson, Jerry E.
Harper, Joel C.
Hart, Lloyd E.
Hatten, Jeffrey
Heberling, Jon L.
Hedstrom, Bill H.
Gibson, Robert
High Country News
Hilgemann, James
Horn, Mr. & Mrs. Kenneth
Howard, Donald
Hoy, Alice
Humphreys, Curtis & Belva

Hungry Horse News
Inland Forest Resource Council
Intermountain Forest & Range Experiment Station (Missoula, MT)
Intermountain Forest & Range Experiment Station (Ogden, UT)
Interstate Commerce Commission
Jacobson, L. Kim
James, Ron
Jarnevic, Michael
Jenkins, Kurt
Johnson, Merlin H.
Johnson, Michael
Jonkel, Dr. Charles
Joslin, Robert
Joy, Arden E.
Kalispell Weekly News
Kantor, Michael R.
Kartheiser, Glenn & Yvonne
Kellett, Michael T.
Kelly, Steven
Kindt, Sandy
Kohlman, Paul C.
Kranz, James R.
Kuhl, Richard A.
Kvamme, Jon E.
Lamping, Ken & Lauretta
Lang, Mrs. Joseph T.
Leland's Honda, Suzuki, & BMW
Lewin, Stuart F.
Lewis & Clark County Commissioners
Lockhart, Dennis D.
Louisiana Pacific Corp.
Mac, Susan
Marathon Oil Company
Marlenee, Representative Ron
Martin, Mrs. Howard
Mason, Bruce, & Girard, Inc.
McClelland, Pat & B. Riley
McCubbins, Floyd
McNamee, Thomas
Melcher, Senator John
Michels, Allen & Karen
Miller, Bill
Missoula City/County Library
Missoulian
Mitchell, Brent & Kay
Montana Bowhunters Association
Montana Department of Fish, Wildlife & Parks
Montana Department of State Lands
Montana Division of Forestry
Montana Historical Society
Montana Outfitters & Guides
Montana Power Company
Montana State Library
Montana State University
Montana Wilderness Association (Helena, MT)
Montana Wilderness Association (Kalispell, MT)
Morrison, Gigi
Morrow, Brent
Mountain States Legal Foundation
Muston, Dave & Kathryn
Myers, Bill
National Forest Products Association
National Marine Fisheries Service
National Park Service
National Wildlife Federation (Missoula, MT)
National Wildlife Federation (Washington, DC)
Natural Resources Defense Council
Nature Conservancy
Naval Oceanography Division
NOAA Ecology & Conservation Division
North Fork Preservation Association
Northwest Energy, Employment, & Development
Northwest Mining Association
O'Boyle, Patty
Office of Architectural & Environmental Preservation
Office of Environmental Project Review (Denver, CO)
Office of Environmental Project Review (Washington, DC)
Olsen, Glen & Dawn
Ouellette, Greg
Owen, Barbara
Owen, Tom E.
Pacific Northwest Utilities Conference Committee
Pacific Power & Light Company
Parker, Mr. & Mrs. Charles D.
Payne, Kenneth
Perry, John
Peterson, Donald K.
Phoenix Geophysics, Inc.
Plum Creek Timber Company, Inc.
Raiman, Mike & Carol
Rayson, Clayton R.
Reis, Michael
Richards, David
Robinson, Loy
Rocky Mountain Forest & Range Experiment Station
Rocky Mountain Oil & Gas Association

Root, Gary
Rural Electrification Administration
Ruth, John
Sakahara, Gary
Satterlee, Royce
Schwinden, Governor Ted
Sedlak, Elaine
Shepard, Keith C.
Sierra Club - Flathead Group
Sierra Club - Northern Plains Group
Slocum, Nancy E.
Soil Conservation Service (Bozeman, MT)
Soil Conservation Service (Washington, DC)
Sommars, Jack
Spratt & Associates
Steele, Gary & Barbara
Stenhouse, David L.
Stewart, Bill
Stolte, F. H. Land & Lumber Company
Strausbaugh, Dan C.
Sverdrup, Lawrence H.
Swanson, John R.
Taplin, J. E.
Texaco, Inc.
Thomas, Frank
Trout Unlimited
Turner, George
U.S. Air Force
U.S. Army Corps of Engineers
U.S. Bureau of Indian Affairs (Pablo, MT)
U.S. Bureau of Indian Affairs (Portland, OR)
U.S. Bureau of Mines
U.S. Coast Guard
U.S. Department of Defense - Pentagon
U.S. Department of Energy
U.S. Department of Health & Human Services
U.S. Department of Labor
U.S. Department of Housing & Urban Development
U.S. Department of Transportation
U.S. Fish & Wildlife Service
U.S. Geological Survey
U.S. Navy
U.S.D.A. Director of Environmental Coordination
U.S.D.A. Forest Service:
    Beaverhead National Forest
    Bitterroot National Forest
    Clearwater National Forest
    Colville National Forest
    Custer National Forest
    Deerlodge National Forest
    Fortine Ranger District
    Gallatin National Forest
    Helena National Forest
U.S.D.A. Forest Service: (cont.)
    Idaho Panhandle National Forest
    Kootenai National Forest
    Lewis & Clark National Forest
    Lincoln Ranger District
    Lolo National Forest
    Nezperce National Forest
    Rexford Ranger District
    Rocky Mountain Ranger District
    Salmon National Forest
    Seeley Lake Ranger District
U.S.D.A. Office of Equal Opportunity
U.S.D.A. Office of Minority Affairs
University of Colorado
University of Idaho
University of Montana
University of Oregon
University of Wisconsin
Vitale, Frank J.
Washington State University
Waterton National Park (Canada)
Western Environmental Trade Association
Western Forest Industries Association
Whitefish Water & Sewer District
Wilderness Society (Boise, ID)
Wilderness Society (Washington, DC)
Wildlife Management Institute
Wilkerson, L. C. & Marko
Williams, Bruce
Williams, Representative Pat
Winter Sports, Inc.
Wolf Ecology Project
Woodard, R. Alan
Yale Law School
Yanishevsky, Rosalind
Yates, Rick
Zerbe, Gordon R. & Sherri
Zundel, Donald & Kathleen

VII. Glossary

ACCESS See Public Access.

ACRE-EQUIVALENT A unit of habitat output related to fish or wildlife habitat improvement projects. Acre equivalents are based on the number of acres of habitat that are influenced by one habitat acre actually modified by the habitat improvement project.

ACRE-FOOT A measure of water or sediment volume equal to the amount which would cover an area of 1 acre to a depth of 1 foot (325,851 gallons or 43,560 cubic feet).

ACTIVITY A measure, course of action, or treatment that is undertaken to directly or indirectly produce, enhance, or maintain forest and range land outputs or achieve administrative or environmental quality objectives.

ACTIVITY FUELS Debris generated by a Forest activity that increases fire potential such a firewood gathering, precommercial thinning, timber harvesting, and road construction.

ACTIVITY TYPE The further description of the actions, measures, or treatments within an activity.

ADFLUVIAL Freshwater fish that migrate from freshwater lakes to freshwater streams to spawn.

ADMINISTRATIVE FACILITIES Those facilities, such as Ranger Stations, work centers and cabins, which are used by the Forest Service in the management of the National Forest.

AIRSHED Basic geographic units in which air quality is managed.

AFFECTED ENVIRONMENT The biological and physical environment that will or may be changed by actions proposed and the relationship of people to that environment.

ALLOTMENT See Range Allotment.

ALLOWABLE SALE QUANTITY The quantity of timber that may be sold from the area of suitable land covered by the Forest Plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the "average annual allowable sale quantity".

ALTERNATIVE A combination of management prescriptions applied in specific amounts and locations to achieve a desired management emphasis as expressed in goals and objectives. One of several policies, plans, or projects proposed for decisionmaking. An alternative need not substitute for another in all respects.

ALTERNATIVE MANAGEMENT DIRECTION STATEMENT A descriptive paragraph that defines the management theme that guides land designations, and management activities and programs.

ALTERNATIVE, NO ACTION An alternative that maintains established trends or management direction.

AMENITY VALUES Resource use for which market values (or proxy values) are not o cannot be established.

ANADROMOUS FISH Fish which spend much of their adult life in the ocean, returning to inland waters to spawn; e.g., salmon, steelhead.

ANALYSIS AREA One or more capability areas combined for the purpose of analysis in formulating alternatives and estimating various impacts and effects.

ANALYSIS OF THE MANAGEMENT SITUATION A determination of the ability of the planning area to supply goods and services in response to society's demand for those goods and services.

ANALYSIS PERIOD, LONG TERM A time horizon of expenditures in an analysis that is two or more 5-Year RPA planning periods in duration. RPA, program, Regional Guide, and Forest Plan analyses have long-term periods.

ANALYSIS PERIOD, SHORT TERM A time horizon of expenditures in an analysis that is only several years in duration. A budget analysis is short term.

ANIMAL UNIT MONTH (AUM) The quantity of forage required by the equivalent of a 1000 lb. mature cow for one month.

ANNUAL FOREST PROGRAM The summary or aggregation of all projects for a given year that, for a given level of funding, make up an integrated (multi-functional) course of action on a Forest planning area.

AQUATIC ECOSYSTEM A stream channel, lake or estuary bed, the water itself, and the biotic communities that occur therein.

ARTERIAL ROADS Roads comprising the basic access network for National Forest System administrative and management activities. These roads serve all resources to a substantial extent, and maintenance is not normally determined by the activities of any one resource. They provide service to large land areas and usually connect with public highways or other Forest arterial roads to form an integrated network of primary travel routes. The location and standards are often determined by a demand for maximum mobility and travel efficiency rather than by a specific resource management service. Usually they are developed and operated for long-term land and resource management purposes and constant service.

ASSESSMENT The Renewable Resource Assessment required by the Resource Planning Act.

ASSET, CAPITAL A natural resource, manmade structure, facility, or improvement in natural resources used as an input in production processes.

ASSET, RESIDUAL The remaining value of a capital asset at the end of the time horizon of the planning or analytical process.

AVAILABLE FOREST LAND Land that has not been legislatively or administratively withdrawn from timber production by the Secretary of Agriculture or Forest Service Chief.

AUM See Animal Unit Month.

AVERAGE ANNUAL CUT The volume of timber harvested in a decade, divided by 10.

BASE SALE SCHEDULE (Base Timber Harvest Schedule) A timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest for any future decade is equal to or greater than the planned sale and harvest for the preceding decade and this planned sale and harvest is not greater than the long-term sustained yield capacity.

BENCHMARK Reference points that define the bounds within which feasible management alternatives can be developed. Benchmarks may be defined by resource output or economic measures.

BENEFIT-COST RATIO Measure of economic efficiency, computed by dividing total discounted primary benefits by total discounted economic costs.

BENEFIT, DIRECT A primary benefit that fulfills specified objectives of the policy, program, or project.

BENEFIT, INDUCED A primary benefit from an output that is incidental to the objectives of the policy, program, or project.

BENEFIT, PRIMARY A benefit accruing to resource owners from a primary output, which may be direct or induced, or a residual asset. Primary benefits are components of net public benefits.

BENEFIT, SUMMARY A benefit accruing to parties other than the resource owners, including effects on local, Regional, and national economies and on consumers of outputs. Secondary benefits are not necessarily included in net public benefits.

BENEFIT (VALUE) Inclusive terms to quantify the results of a proposed activity, project or program expressed in monetary or nonmonetary terms.

BEST MANAGEMENT PRACTICES (BMP) The set of practices in the Forest Plan which, when applied during implementation of a project, ensures that water related benefical uses are protected and that State water quality standards are met. BMP's can take several forms. Some are defined by State regulation or memoranda of understanding between the Forest Service and the States. Best Management Practices for the Flathead River drainage are defined in Appendix A of the Flathead Drainage 208 Project. (Appendix HH of the Forest Plan) Others are defined by the Forest interdisciplinary planning team for application Forest-wide. Both of these kinds of BMP's are included in the Forest Plan as Forest-wide Standards. A third kind are identified by the interdisciplinary team for application to specific management areas; these are included as Management Area Standards in the appropriate management areas. A fourth kind, project level

BMP's, are based on site-specific evaluation and represent the most effective and practicable means of accomplishing the water quality and other goals of the specfic area involved in the project. These project level BMP's can either supplement or replace the Forest Plan standards for specific projects.

BIG GAME Those species of large mammals normally managed as a sport hunting resource.

BIG-GAME SUMMER RANGE Land used by big game during the summer months.

BIG-GAME WINTER RANGE The area available to and used by big game through the winter season.

BIOLOGICAL POTENTIAL The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.

BIOLOGICAL GROWTH POTENTIAL The average net growth attainable in a fully stocked natural forest stand.

BOARD FOOT A unit of measurement represented by a board one foot square and one inch thick.

BROADCAST BURN Allowing a controlled fire to burn over a designated area within well-defined boundaries, for reduction of fuel hazard, as a silvicultural treatment, or both.

BOARD FOOT/CUBIC FOOT CONVERSION The mathematical ratio of the board feet contained in one cubic foot of timber. This ratio varies with tree species, diameter, height, and form factors.

BROWSE Twigs, leaves, and young shoots of trees and shrubs on which animals feed; in particular, those shrubs which are utilized by big-game animals for food.

CANOPY The more or less continuous cover of branches and foliage formed collectively by the crown of adjacent trees and other woody growth.

CAPABILITY The potential of an area of land and or water to produce resources, supply goods and services, and allow resource uses under a specified set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils and geology, as well as the application of management practices, such as silviculture or protection from fires, insects, and disease.

CAPABILITY AREA A geographic delineation used to describe characteristics of the land and resources in integrated Forest planning. Capability areas may be synonomous with ecological land units, ecosystems, or land response units.

CAPITAL INVESTMENT Investment in facilities such as roads and structures with specially-appropriated funds.

CARRYING CAPACITY 1 (recreation): the amount of recreation use an area can sustain without deterioration of site quality; 2 (wildlife): the maximum number of animals an area can support during a given period of the year; 3 (range): the maximum stocking rate possible without damaging the vegetation or related resources. Carrying capacity may vary from year to year on the same area due to fluctuating forage production.

CAVITY A hollow in a tree that is used by birds or mammals for roosting and reproduction.

CEQ See Council of Environmental Quality.

CFR Code of Federal Regulations.

CHARGEABLE VOLUME Chargeable volume is all volume that is included in the growth and yield projections for the selected management prescriptions used to arrive at the "allowable sale quantity," based on Regional utilization standards.

CLEARCUTTING Harvesting of all trees in one cut. It prepares the area for a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as separate age class in planning. Regeneration is obtained through natural seeding, or through planting or direct seeding.

CLIMAX PLANT COMMUNITY The final or stable biotic community in a developmental series.

CLOSURE The administrative order that does not allow specified uses in designated areas or on Forest development roads or trails.

CMAI See Culmination of Mean Annual Increment.

COEFFICIENT (COST, VALUE, YIELD) The numeric units used to include costs, values, and outputs in he analysis model used in the formulation of the Forest Plan.

COLLECTOR ROADS Roads constructed to serve two or more elements but which do not fit into the other two road categories (arterial or local). Construction costs of these facilities are prorated to the respective element served. These roads serve smaller land areas and are usually connected to a Forest arterial or public highway. They collect traffic from local Forest roads or terminal facilities. The location and standard are influenced by both long term multi-resource service needs and travel efficiency. Forest collector roads are operated for constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

COMMERICAL FOREST LAND (SUITABLE TIMBER LAND) Land that is producing, or is capable of producing, crops of industrial wood and (1) has not been withdrawn by Congress, the Secretary of Agriculture or the Chief of the Forest Service; (2) where existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions; and (3) where existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be obtained within years after final harvesting.

COMMERCIAL TIMBER SALES The selling of timber from National Forest System lands for the economic gain of the party removing and marketing the trees.

COMMODITIES Resources with commercial value; all resource products which are articles of commerce, such as timber, range forage, and minerals.

COMMON MATERIALS See Minerals, Common Variety

COMMUNITY COHESION The degree of unity and cooperation within a community in working toward shared goals and solutions to problems.

COMMUNITY STABILITY The capacity of a community to absorb and cope with change without major hardship to institutions or groups within the community.

CONCERN See Management Concern.

CONDITION CLASS A descriptive category of the existing tree vegetation as it relates to size, stocking, and age.

CONGRESSIONALLY DESIGNATED AREAS Areas established by Congressional legislation, such as National Wildernesses, National Wild and Scenic Rivers, and National Recreation Areas.

CONSTRAINT A confinement or restriction on the range of permissible choices.

CONSUMPTIVE USES Uses of a resource that reduce the supply. Examples of some consumptive uses of water are irrigation, domestic and industrial water use, grazing, and timber harvest.

CONTINENTAL DIVIDE The drainage divide between waters flowing to the Atlantic Ocean and the Pacific Ocean.

CORD A unit of gross volume measurement for stacked roundwood based on external dimensions, generally implies a stack of four feet by four feet vertical cross section and eight feet long, contains 128 stacked cubic feet.

CORDUROY A method of subgrade reinforcement often used on trails and for some roads whereby logs are placed perpendicular to the traveled way to support a surfacing material.

CORRIDOR (UTILITY CORRIDOR) A linear strip of land which has ecological, technical, economic, social, or similar advantages over other areas for the present or future location of transportation or utility routes.

COST The negative or adverse effects or expenditures resulting from an action. Costs may be monetary, social, physical, or environmental in nature.

COST EFFICIENCY The usefulness of specified inputs (costs) to produce specified outputs (benefits). In measuring cost efficiency, some outputs, including environmental, economic, or social impacts, are not assigned monetary values but are achieved at specific levels in the least cost manner. Cost efficiency is usually measured using present net value, although use of benefit-cost ratios and rates of return may be appropriate.

COST-SHARE Refers to the process of cooperating in the joint development of a road system. The document executed through this process, called "Road Right-of-Way Construction and Use Agreement," specifies the terms of developing the transportation system for a specified land area.

COUNCIL ON ENVIRONMENTAL QUALITY An advisory council to the President established by the National Environmental Policy Act of 1969. It reviews Federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

COVER/FORAGE RATIO The ratio of tree cover (usually conifer types) to foraging areas (natural openings, clearcuts, etc.)

CRITICAL HABITAT Specific areas within the geographical area occupied by the species on which are found those physical and biological features (1) essential to the conservation of the species and (2) which may require special management considerations or protection. Critical habitat shall not include the entire geographic area which can be occupied by the threatened and endangered species.

CUBIC FOOT The amount of wood volume equivalent to a cube 1 foot by 1 foot by 1 foot.

CULMINATION OF MEAN ANNUAL INCREMENT (CMAI) The point at which the volume increment for a tree or stand of trees has achieved it's highest mean value. Mean annual increment is based on expected growth according to the management intensities and utilization standards assumed in the Forest Plan. The CMAI is calculated by dividing the attained growth (volume) by it's corresponding age.

CULTURAL RESOURCES The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events, as a sacred area of native peoples, etc.) of an area of prehistoric or historic occupation.

CUTTING CYCLE For a crop or stand, the planned interval of time between the beginning of one cutting period and the beginning of the suceeding cutting period.

DEFICIT TIMBER SALE A timber sale that has an appraised value that would produce less than a standard profit and risk margin for an average operator as estimated by the Forest Service appraisal system.

DEMAND The amount of output that users are willing to take at a specific price, time period, and conditions of sale.

DEMAND ANALYSIS A study of the factors affecting the schedule of demand for a good or service, including the price-quantity relationship, if applicable.

DEPARTURE A schedule which deviates from the principle of nondeclining flow by exhibiting a planned decrease in the timber sale and harvest schedule at any time in the future.

DEPENDENT COMMUNITIES Communities whose social, economic, or political life would become discernably different in important respects if market or nonmarket outputs from the National Forests were cut off.

DEVELOPED RECREATION Recreation that occurs where improvements enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

DEVELOPED RECREATION SITES Relatively small, distinctly defined area where facilities are provided for concentrated public use, i.e., campgrounds, picnic areas and swimming areas.

DIAMETER BREAST HEIGHT (d.b.h.) The diameter of a tree measured 4 1/2 feet above the ground.

DIRECT EFFECTS Effects on the environment which occur at the same time and place as the initial cause or action.

DISCOUNT RATE An interest rate that reflects the cost or time value of money. It is used in discounting future costs and benefits.

DISCOUNTING: An economic adjustment for the time value of money; mathematical reduction of costs and/or benefits which occur in the future to the present time for purposes of comparison.

DISPERSED RECREATION That portion of outdoor recreation use which occurs outside of developed sites in the unroaded and roaded Forest environment; i.e., hunting, backpacking, and berry picking.

DISTRICT RANGER The official responsible for administering the National Forest System Lands on a Ranger District.

DIVERSITY The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.

DRAFT ENVIRONMENTAL IMPACT STATEMENT See Environmental Impact Statement, draft.

ECONOMICS The study of how limited resources, goods, and services are allocated among competing uses.

ECOSYSTEM A complete, interacting system of organisms considered together with their environment (for example; a marsh, a watershed, or a lake.)

ECOTONE A transition or junction zone between two or more diverse communities (ecosystems).

EDAPHIC The influence of soils on living organisms, particularily plants, including man's use of the land for plant growth.

EFFECTS Physical, biological, social and economic results (expected or experienced) resulting from achievement of outputs. Effects can be direct, indirect, and cumulative.

EFFICIENCY, ECONOMIC The usefulness of inputs (costs) to produce outputs (benefits) and effects when all costs and benefits that can be identified and valued are included in the computations.

ELK HIDING COVER Vegetation, primarily trees, capable of hiding 90 percent of an elk seen from a distance of 200 feet or less.

ELK SECURITY COVER (EFFECTIVE ELK SECURITY COVER) Elk hiding cover modified by open roads. The greater the density of open roads within an area, the less effective is the hiding cover in providing security for elk.

ENDANGERED SPECIES Any species, plant or animal, which is in danger of extinction throughout all or a significant portion of its' range. Endangered species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

ENDING INVENTORY CONSTRAINT (EIC) Constraint to ensure that the total timber volume left at the end of the planning horizon will equal or exceed the volume that would occur in a managed Forest.

ENVIRONMENTAL ANALYSIS An analysis of alternative actions and their predictable short and long-term environmental effects which include physical, biological, economic, social, and environmental design factors and their interactions.

ENVIRONMENTAL ASSESSMENT A concise public document for which a Federal agency is responsible that serves to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare and environmental impact statement or a finding of no significant impact; (2) Aid an agency's compliance with the National Environmental Policy Act when no environmental impact statement is necessary; (3) Facilitate preparation of an environmental impact statement when one is necessary.

ENVIRONMENTAL IMPACT STATEMENT, DRAFT (DEIS) A detailed written statement as required by Sec. 102(2)(C) of the National Environmental Policy Act.

ENVIRONMENTAL IMPACT STATEMENT, FINAL (EIS) The final version of the public document required by NEPA. (see above)

EPHEMERAL STREAMS Streams that flow only as a direct response to rainfall or snowmelt events. They have no baseflow.

EROSION The group of processes whereby earthy or rocky material is worn away by natural sources such as wind, water or ice and removed from any part of the earth's surface.

ESCAPEMENT The number of adult anadromous fish escaping past commercial and recreational harvest fisheries and other sources of mortality, to upstream spawning areas.

EVEN-AGED MANAGEMENT The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. Managed even-aged Forests are characterized by a distribution of the stands of varying ages (and, therefore, tree sizes) throughout the Forest area. The difference in ages between trees forming the main canopy level of the stand does not usually exceed 20 percent of the age of the stand at harvest rotation age. Regeneration in a particular stand is obtained during a short period at or near the time that a stand has reached the desired age or size for regeneration and is harvested. Cutting methods include clearcutting, shelterwood cutting, and seed tree cutting.

EXPERIENCE LEVELS A concept used in recreation management to delineate the range of opportunities for satisfying basic recreation needs of people. A scale of five experience levels ranging from "primitive" to "highly developed" is planned for the National Forest System.

EXTRACTIVE USE Use of natural resources that removes them from their natural setting.

FAMILY UNIT A camp or picnic spot with table, fireplace, tent pad, and parking spot.

FEE SITE A Forest Service recreation area in which users must pay a fee. Fee sites must meet certain standards and provide certain facilities as specified in the Forest Service Manual.

FINAL CUT Removal of the last seed bearers or shelter trees after regeneration is considered to be established under a shelterwood system.

FLOOD PLAIN The lowland and relatively flat area adjoining inland waters, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

FORAGE All browse and nonwoody plants available to livestock or wildlife for feed.

FORB Any herbaceous plant other than true grasses, sedges, or rushes.

FOREST AND RANGELAND RENEWABLE RESOURCES PLANNING ACT OF 1974 An act of Congress which requires the assessment of the Nation's renewable resources and the periodic development of a national renewable resources program. It also requires the development, maintenance, and as appropriate, revision of land and resource management plans for units of the National Forest System (e.g. National Forest).

FOREST LAND Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest use. Lands developed for nonforest use include areas for crops, improved pasture, residential, or administrative areas, improved constructed roads of any width, and adjoining road clearing and powerline clearing of any width.

The term "occupied" when used to define forest land, will be measured by canopy cover of live forest trees at maturity. The minimum area for classification of forest land will be 1 acre or greater. Unimproved roads, trails, stream and clearings in forest areas are classified as forest if they are less than 120 feet in width.

FOREST LOCAL ROADS Roads constructed and maintained for, and frequented by, the activities of a given resource element. Some uses may be made by other element activities, but normally maintenacne is not affected by such use. These roads connect terminal facilities with Forest collector or Forest arterial roads or public highways. The location and standard, usually are determined by the requirement of a specific resource activity rather than by travel efficiency. Forest local roads may be developed and operated for constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

FOREST SUPERVISOR The official responsible for administering the National Forest System lands in a Forest Service Administrative unit, which may consist of one or more National Forests or all the Forests within a State.

FOREST SYSTEM ROAD A road wholly or partly within or adjacent to and serving the National Forest System and which is necessary for the protection, administration and utilization of the National Forest System and the use and developments of it's resources.

FORPLAN A linear programing system used for developing and analyzing Forest planning alternatives.

FOREST-WIDE MANAGEMENT GUIDELINES An indication or outline of policy or conduct dealing with the basic management of the Forest. Forest-wide management guidelines apply to all areas of the Forest regardless of the other management prescriptions applied.

FSH Forest Service Handbook.

FSM Forest Service Manual.

FUEL BREAK A zone in which fuel quantity has been reduced or altered to provide a position for suppression forces to make a stand against wildfire. Fuel breaks are designated or constructed before the outbreak of a fire. Fuel breaks may consist of one or a combination of the following: natural barriers, constructed fuelbreaks, manmade barriers.

FUELS Include both living plants; dead, woody vegetative materials; and other vegeatative materials which are capable of burning.

FUELS MANAGEMENT Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.

FUELS TREATMENT The rearrangement or disposal of natural or activity fuels to reduce the fire hazard.

FULL-SERVICE MANAGEMENT The administration, operation, and maintenance of developed recreation sites to established standards with the objective to provide a pleasant recreation experience for the visitor and exceed the minimum health and safety needs of the visitors.

GAME SPECIES Any species of wildlife or fish for which seasons and bag limits have been prescribed, and which are normally harvested by hunters, trappers, and fisherman under State or Federal laws, codes, and regulations.

GEOHYDROLOGY Referring to the hydrologic, or flow characteristics of subsurface waters.

GOAL A concise statement that describes a desired condition to be achieved. It is normally expressed in broad, general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principal basis from which objectives are developed.

GOODS AND SERVICES The various outputs, including onsite uses, produced by forest and rangeland renewable resources.

GRAZING ALLOTMENT See Range Allotment.

GROUP SELECTION CUTTING A cutting method to develop and maintain uneven-aged stands by the removal of small groups of trees to meet a predetermined goal of size distribution and species composition in remaining stands.

GROWING STOCK LEVEL A relative stand density measure used to guide a management objective such as maximizing timber volume yields or optimizing big game thermal cover.

GUIDELINE See Standard and Guideline.

HABITAT TYPE An aggregation of all land areas potentially capable of producing similar plant communities at climax.

HABITAT TYPE GROUP A logical grouping of habitat types to facililtate resource planning and public presentations.

HARD SNAGS A dead tree not significantly decayed.

HIDING COVER Trees of sufficient size and density to conceal animals from view at 200 feet.

IMPACT ANALYSIS AREA The delineated area subject to significant economic and social impacts from Forest Service activities included in an economic or social impact analysis.

IMPROVEMENT CUTTING Removing trees of undesirable species, form, or condition from the main canopy in stands past the sapling stage to improve the composition and quality.

INDICATOR SPECIES Species identified in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish including those that are socially or economically important.

INDIRECT EFFECTS Secondary effects which occur in locations other than the initial action or significantly later in time.

INDIVIDUAL TREE SELECTION HARVEST A cutting method to develop and maintain uneven-age stands by the removal of selected trees from specified age classes over the entire stand area in order to meet a predetermined goal of age distribution and species in the remaining stand.

INDUSTRIAL WOOD All commercial roundwood products except fuelwood.

INSTREAM FLOWS The minmum water volume (cubic feet per second) in each stream necessary to meet seasonal streamflow requirements for maintaining aquatic ecosystems, visual quality, recreational opportunities, and other uses.

IN-MIGRATION The movement of human population into an area.

INTEGRATED PEST MANAGEMENT A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategy includes the impact of the unregulated pest population on various resource values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and ecology of the pest-host system and consist of a combination of tactics such as timber stand improvement plus selective use of pesticides. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable.

INTENSIVE GRAZING Grazing management that controls distribution of cattle and duration of use on the range, usually by fences, so parts of the range are rested during the growing season.

INTER-DISCIPLINARY TEAM (ID TEAM) A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view to bear on the problem.

INTERMEDIATE HARVEST Any removal of trees from a stand between the time of its formation and the regeneration cut. Most commonly applied intermediate cuttings are release, thinning, improvement, and salvage.

INTERMITTENT STREAM A stream which flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow.

INTERPRETATIVE SERVICES Visitor information services designed to inform and educate Forest visitors improving their understanding, appreciation and enjoyment of National Forest resources.

INVENTORY DATA Recorded measurements, facts, evidence, or observations on Forest resources such as soil, water, timber, wildlife, range, geology, minerals, and recreation which was used to determine the capability and opportunity of the Forest to be managed for those resources.

ISSUE See Public Issue.

"KEY REACHES" OF WATERSHED SYSTEM A representative stream segment that can be expected to be sensitive to water resource changes and which adequately reflects the effects of management of the stream channel, the water, and their beneficial uses.

KEY SUMMER RANGE An area that is potentially capable of supporting big game during the summer use period.

KEY WINTER RANGE The portion of the yearlong range where big game find food and/or RANGE cover during severe winter weather.

LAND EXCHANGE The conveyance of non-Federal Land or interests to the United States in exchange for National Forest System land or interests in land.

LANDLINE LOCATION The legal identification, accurate location, and description of property boundaries.

LANDTYPE An inventory map unit with relatively uniform potential for a defined set of land uses. Properties of soils, landform, natural vegetation, and bedrock are commonly components of landtype delineation used to evaluate potentials and limitations for land use.

LANDTYPE GROUP A logical grouping of landtypes that facilitate resource planning.

LEASABLE MINERALS See Minerals, Leasable.

LEVEL I FIRE ANALYSIS General fire management analysis to provide historical information that assists the interdisciplinary team in the analysis of the management situation and formulation of alternatives for the Forest Plan.

LEVEL II FIRE ANALYSIS An analytical process which guides the implementation of fire management activities of the Forest Plan.

LINEAR PROGRAMMING A mathematical method used to determine the optimal distribution of limited resources between competing demands when both the objective (e.g., profit or cost) and the restrictions on its attainment are expressible as a system of linear equalities or inequalities (e.g., y=a+bx).

LIMITED SURFACE USE STIPULATION A mineral lease clause, which, if attached to a mineral lease, prohibits surface disturbing activities on the lease pending submission of a surface use and operations plan which is satisfactory to the BLM and the surface management agency for protection of special existing or planned uses. This stipulation may, when site-specific operations are proposed and analyzed, be modified if other less stringent mitigation is determined to be sufficient to protect the other resources.

LOCAL DEPENDENT INDUSTRIES Local industries relying on National Forest outputs for economic activity.

LOCAL ROADS These roads connect terminal facilities with Forest collector or Forest arterial roads or public highways. The location and standard are usually determined by the requirement of a specific resource activity rather than by travel efficiency. Forest local roads may be developed and operated for constant or intermittent service depending on land use and resource management objectives for the area served by the facility.

LOCATABLE MINERALS See Minerals, Locatable.

LOESS A uniform and unstratified fine sand or silt transported by wind.

LONG-TERM SUSTAINED YIELD CAPACITY (LYSY) The highest uniform wood yield from lands being managed for timber production that may be sustained under a specified intensity of management consistent with multiple-use objectives

M Thousand

MM Million

MAUM Thousand Animal Unit Months.

MBF Thousand Board Feet

MMBF Million Board feet

MMCF Million Cubic feet

MANAGEMENT ACTION Any activity undertaken as part of the administration of the Forest.

MANAGEMENT AREA An aggregation of capability areas which have common management direction and may be noncontiguous in the Forest. Consists of a grouping of capability areas selected through evaluation procedures and used to locate decisions and resolve issues and concerns.

MANAGEMENT CONCERN An issue, problem, or a condition which constrains the range of management practices identified by the Forest Service in the planning process.

MANAGEMENT DIRECTION A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them.

MANAGEMENT EFFECTS Physical, biological, social, and economic responses to management practices.

MANAGEMENT EMPHASIS A management practice or combination of management practices designed to stress production of a particular type of output or mix of outputs.

MANAGEMENT INTENSITY A management practice or combination of management practices and associated costs designed to obtain different levels of goods and services.

MANAGEMENT OPPORTUNITY A statement of general actions, measures, or treatments that address a public issue or management concern.

MANAGEMENT PRACTICE A specific activity, measure, course of action, or treatment. Proposed management practices are those scheduled in the first decade of Forest Plan implementation. Probable management practices are those scheduled in the second decade of Forest Plan implementation.

MANAGEMENT PRESCRIPTION Management practices and intensities selected and scheduled for application on a specific area to attain multiple use and other goals and objectives.

MANAGEMENT STANDARDS AND GUIDELINES See Standard and Guideline.

MARKET VALUE The unit price of an output normally exchanged in a market after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.

MATURE TIMBER Individual trees or stands of trees that in general are at their maximum rate in terms of the physiological processes expressed as height, diameter, and volume growth.

MAXIMUM RESOURCE POTENTIAL The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.

MEAN ANNUAL INCREMENT The total volume increase in a tree or stand of trees up to a given age, divided by that age.

MINERAL ENTRY The filing of a mining claim on Federal land to obtain the right to mine any locatable minerals it may contain. Also the filing for a mill site on Federal land for the purpose of processing off-site locatable minerals.

MINERAL WITHDRAWAL A formal designation by the Secretary of Interior which precludes entry or disposal of mineral commodities under the mining and/or mineral leasing laws.

MINERAL EXPLORATION The search for valuable minerals.

MINERAL PRODUCTION The extraction of mineral deposits.

MINERALS, COMMON VARIETY Deposits of sand, stone, gravel, etc. of widespread occurrence and not having distinct or special value. These deposits are used generally for construction and decorative purposes and are disposed of under the Materials Act of 1947.

MINERALS, LEASABLE Those minerals which are disposed of under authority of the various mineral leasing acts. Minerals include coal, oil, gas, phosphate, sodium, potassium, oil shale,sulfur (in Louisiana and New Mexico), and geothermal steam.

MINERALS, LOCATABLE Those minerals which are disposed of under the general mining laws. Included are minerals such as gold, silver, lead, zinc, and copper which are not classed as leasable or saleable.

MINIMUM MANAGEMENT REQUIREMENTS Standards for resource protection, vegetative manipulation, silviculturist practices, even-aged management, riparian areas, soil and water and diversity, to be met in accomplishing National Forest System goals and objectives (see 36 CFR 219.27).

MINIMUM RESOURCE STANDARDS Specific conditions of individual resources which must be maintained in order to meet minimum management requirements (36 CFR 219.27) and/or other legal requirements.

MINIMUM VIABLE See Viable Population.

MINING CLAIMS A geographic area of the public lands held under the general mining laws in which the right of exclusive possession is vested in the locator of a valuable mineral deposit. Includes lode claims, placer claims, mill sites, and tunnel sites.

MITIGATE To lessen the severity.

MITIGATION Avoiding or minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact by preservation and maintenance operations during the life of the action.

MODIFICATION (VQO) See Visual Quality Objective (VQO).

MONITORING AND EVALUATION The periodic evaluation on a sample basis of Forest Plan management practices to determine how well objectives have been met and how closely management standards have been applied.

MONTANA WILDERNESS STUDY ACT AREAS Those areas that are required to be studi for their wilderness suitability under the Montana Wilderness Study Act of 197 (Public Law 95-150).

MOUNTAIN PINE BEETLE A species of bark beetle that spends the major portion their life cycle in a tree's cambium layer. Through a combination of the inse feeding on the cambium layer and the introduction of fungi which stop the resi flow, the tree is girdled and killed.

MULTIPLE USE The management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that wi best meet the needs of the American people; making the most judicious use of th land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to confor to changing needs and conditions; that some lands will be used for less than al of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the great dollar return or the greatest unit output.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) An act which encourages productive a enjoyable harmony between man and his environment; promotes efforts to prevent eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natura resources important to the Nation; and establishes a Council on Environmental Quality.

NATIONAL FOREST LANDSCAPE MANAGEMENT ACT (NFLMA) The planning and design of t visual aspects of multiple-use land management in such ways that the visual effects maintain or upgrade man's psychological welfare.

NATIONAL FOREST MANAGEMENT ACT (NFMA) A law passed in 1976 as amendments to t Forest and Rangeland Renewable Resources Planning Act that requires the preparation of Regional and Forest plans and the preparation of regulations to guide that development.

NATIONAL FOREST SYSTEM All National Forest System lands reserved or withdrawn from the public domain of the United States, all National Forest System lands acquired through purchase, exchange, donation, or other means, the national grasslands and land utilization projects administered under Title III.

NATIONAL RECREATION TRAILS Trails designated by the Secretary of the Interior the Secretary of Agriculture as part of the national system of trails authorized by the National Trails System Act. National recreation trails provide a variety of outdoor recreation uses.

NATIONAL REGISTER OF HISTORIC PLACES A listing maintained by the National Park Service of areas which have been designated as being of historical significance. The Register includes places of local and State significance as well as those of value to the Nation as a whole.

NATIONAL WILD AND SCENIC RIVER SYSTEM Rivers with outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition.

NATIONAL WILDERNESS PRESERVATION SYSTEM All lands covered by the Wilderness Act and subsequent wilderness designations, irrespective of the department or agency having jurisdiction.

NEPA See National Environmental Policy Act.

NFMA See National Forest Management Act.

NET PUBLIC BENEFITS An expression used to signify the overall long-term value to the Nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index. The maximization of net public benefits to be derived from management of units of the National Forest System is consistent with the principles of multiple use and sustained yield.

NO ACTION ALTERNATIVE The management direction, activities, outputs, and effects most likely to exist in the future if the current plan would continue unchanged.

NONCHARGEABLE VOLUME All volume that is not included in the growth and yield projections for the selected management prescriptions used to arrive at the allowable sale quantity. It also includes all volume removed from nonsuitable lands.

NONCOMMODITY OUTPUTS See Output, Nonmarket.

NONCONSUMPTIVE USE Those uses of resources that do not reduce the supply. Nonconsumptive uses of water include hydroelectric power generation, boating, swimming, etc.

NONDECLINING YIELD The principle that the quantity of timber planned for sale or harvest for any future decade must be equal to or greater than the planned sale and harvest for the preceding decade, and this planned sale and harvest for any decade is not greater than the long-term sustained yield capacity.

NONEXTRACTIVE USE Use which does not remove a resource from its natural setting.

NONGAME Species of animals which are not managed as a sport hunting resource.

NONPOINT SOURCE POLLUTION Sources from which the pollutants discharged are: (1) induced by natural processes, including precipitation, seepage, percolation, and runoff; (2) not traceable to any discrete or identifiable facility; and (3) bette controlled through the utilization of Best Management Practices, including proces and planning techniques. This includes natural pollution sources not directly or indirectly caused by man.

NONPRICE OUTPUTS See Output, Nonmarket.

NONSTOCKED A stand of trees or aggregation of stands that have a stocking leve below the minimum specified for meeting the prescribed management objectives.

NO-SURFACE OCCUPANCY STIPULATION A mineral lease clause which, if attached to a mineral lease, prohibits the lessee from constructing roads, well pads or otherwise occupying the land surface unless, upon site-specific review, it is determined by the authorized officer that the requirements of the stipulation ca be modified if other less stringent mitigation is determined to be sufficient to protect the other resources.

OBJECTIVE A concise time-specific statement of measurable planned results that respond to preestablished goals. An objective forms the basis for further planning, to define the precise steps to be taken and the resources to be used i achieving identified goals.

OBJECTIVE FUNCTION A term used in linear programming describing the criteria t be optimized. Examples of objective functions are: maximize present net value, minimize cost,r maximize timber.

OFF-ROAD VEHICLE Any vehicle capable of being operated off an established road or trail, e.g., motorbikes, four-wheel drives, and snowmobiles.

OLD-GROWTH DEPENDENT SPECIES The group of wildlife species that is associated with old-growth forest plant communities.

OLD-GROWTH HABITAT A community of forest vegetation which has reached a late stage of plant succession characterized by a diverse stand structure and composition along with a significant showing of decadence. The stand structure will have multistoried crown heights and variable crown densities. There is a variety of tree sizes and ages ranging from small groups of seedlings and saplin to trees of large diameters exhibiting a wide range of defect and breakage both live and dead, standing and down. The time it takes for a forest stand to devel into old-growth condition depends on many local variables such as forest type, habitat type, and climate. Natural chance events involving forces of nature suc as weather, insect, disease, fire, and the actions of man also affect the rate development of old-growth stand conditions.

OLD GROWTH TIMBER See Overmature Timber.

OPERATIONS PLAN See Plan of Operation.

OPPORTUNITY COST An opportunity cost is value foregone. In this analysis it is a cost calculated as the difference between present net value of the alternative and the present net value of the maximum PNV increment.

OPTIMUM The greatest level of production that is consistent with other resource requirements as constrained by environmental, social, and economically sound conditions.

OUTPUT A good, service, or on-site use that is produced from forest and rangeland resources. Definitions of Forest and rangeland output definitions, codes and units measure are contained in the Management Information Handbook (FSH 1309.11). Examples are: X06-Softwood Sawtimber Production - MBF; X80-Increased Water Yield - Acre Feet; W01-Primitive Recreation Use - RVD's.

OUTPUT, CONTROLLED The amount of an output which management has the legal and practical ability to control with management activities.

OUTPUT, DIRECT An output that fulfills specified objectives of the policy, program, or project being evaluated.

OUTPUT, INDUCED A good, service, or on-site use which is incidental to the objectives of the resource activity. An example is the timber harvest activity which produces a primary output of board feet of timber and an induced output of acres of improved wildlife habitat because of the harvest activity.

OUTPUT, MARKET A good, service, or on-site use that can be purchased at a price.

OUTPUT, NONCONTROLLED The amount of an output which will occur regardless of management activity.

OUTPUT, NONMARKET A good, service, or on-site use not normally exchanged in a market.

OUTPUT, PRIMARY A good, service, or on-site use that results from the completion of an activity, project or program that meets the specific objectives of the resource. Examples are board feet of timber, recreation visitor days, etc.

OVER-THE-COUNTER SALE The selling of Forest products without bidding, as requested by the general public, usually for products such as fuelwood, corral poles, ornamental shrubs, etc.

OVERMATURE TIMBER Individual trees or stands of trees that in general are past their maximum rate in terms of the physiological processes expressed as height, diameter, and volume growth.

OVERSTORY That uppermost canopy of the forest when there is more than one level of vegetation.

OVERTHRUST BELT A complex geologic feature, extending from Alaska to Mexico, which resulted from compressional stresses within the earth, and which is characterized by abundant thrust faults. This zone passes through and includes all of western Montana.

PARTIAL RETENTION (VQO) See Visual Quality Objective (VQO).

PARTICULATES Small particles suspended in the air and generally considered pollutants.

PATENTED MINING CLAIMS A patent is a document which conveys title to land. When patented, a mining claim becomes private property and is land over which the United States has no property rights, except as may be reserved in the patent. After a mining claim is patented, the owner does not have to comply with requirements of the General Mining Law or implementing regulations.

PERENNIAL STREAMS Streams that flow continuously throughout most years.

PAYMENT IN LIEU OF TAXES Payments to local or State governments based on ownership of Federal land and not directly dependent on production of outputs or receipt sharing. Specifically, they include payments made under the Payments in Lieu of Taxes Act of 1976 by the U.S. Department of the Interior.

PERMITTED GRAZING Use of a National Forest range allotment under the terms of a grazing permit.

PERSON YEAR (WORK YEAR) A person year equals 2,087 hours of work time. A person year may be one person working yearlong or several persons filling seasonal positions.

PLAN OF OPERATIONS A written plan describing mining and mineral processing activities that will likely cause a significant surface disturbance. The plan is prepared by those engaged in activities, such as prospecting, exploration or mining, in the National Forest. This plan must be approved by a Forest Officer.

PLANNING AREA The area of the National Forest System covered by a Regional or Forest Plan.

PLANNING CRITERIA Standards, tests, rules, and guidelines by which the planning process is conducted and upon which judgments and decisions are based.

PLANNING HORIZON The overall time period considered in the planning process that spans all activities covered in the analysis or plan and all future conditions and effects of proposed actions which would influence the planning decisions. In the National Forest planning process, this is 150 years.

PLANNING PERIOD A time interval for which inputs and outputs are identified in a planning process. Current RPA and National Forest Plan intervals are 5 and 10 years, respectively.

PLANNING RECORDS Documents and files that contain detailed information and decisions made in developing the Forest Plan. Available at the Forest Supervisor's Office.

PNV See Present Net Value.

POLETIMBER TREES Live trees of commercial species at least five inches in diameter at breast height but smaller than sawtimber size, and of good form and vigor.

POLICY A guiding principle upon which is based a specific decision or set of decisions.

PRACTICE See Management Practice.

PRECAMBRIAN Period of geologic time extending from more than 3,600 years to about 570 million years ago.

PRECOMMERCIAL THINNING The selective felling, deadening, or removal of trees in a young stand primarily to accelerate diameter increment on the remaining stems, maintain a specific stocking or stand density range, and improve the vigor and quality of the trees that remain.

PREDATOR One that preys, destroys, or devours - usually an animal that lives by preying on other animals.

PREFERRED ALTERNATIVE The alternative recommended for implementation by the Responsible Official from the range of alternatives studied in a Draft Environmental Impact Statement or Assessment under requirements of the 1969 National Environmental Policy Act.

PREPARATORY CUT Removal of trees near the end of a rotation so as to permanently open the canopy and enlarge the crowns of seed bearers, with a view to improving conditions for seed production and natural generation, as typically in shelterwood systems.

PRESCRIBED BURNING The intentional application of fire to wildland fuels in either their natural or modified state under such conditions as allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to further certain planned objectives (i.e., silviculture, wildlife management, etc.).

PRESCRIBED FIRE A fire burning under specified conditions which will accomplish planned objectives in strict compliance with an approved plan and the conditions under which the burning takes place and the expected results are specific, predictable, and measurable.

PRESCRIPTION See Management Prescription.

PRESENT NET VALUE (PNV) The difference between the discounted value (benefits) of all outputs to which monetary value or established market prices are assigned and the total discounted costs of managing the planning area.

PRESENT NET WORTH The discounted value of price times quantity less cost.

PRESERVATION (VQO) See Visual Quality Objectives (VQO).

PRESUPPRESSION Activities required in advance of fire occurrence to ensure effective suppression action. Includes (1) recruiting and training fire forces; (2) planning and organizing attack methods; (3) procuring and maintaining fire equipment; and (4) maintaining structural improvements necessary for the fire program.

PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY (PSD) A classification established to preserve, protect, and enhance the air quality in National Wilderness Preservation System areas in existence prior to August 1977 and other areas of National significance, while ensuring economic growth can occur in a manner consistent with the preservation of existing clean air resources. Specific emission limitations and other measures, by class, are detailed in the Clean Air Act (42 U.S.C. 1875 et 15q.).

PRICED OUTPUTS Resource outputs that have market or assigned dollar values.

PRIMITIVE RECREATION SETTING A classification of the recreation opportunity spectrum that characterizes an essentially unmodified natural environment of a size or remoteness that provide significant opportunity for isolation from the signs and sounds of man and a feeling of vastness of scale. Visitors have opportunity to be part of the natural environment, encounter a high degree of challenge and use a maximum of outdoor skills but have minimum opportunity for social interaction.

PRIMITIVE ROADS Roads that came into existence with little regard for grade or drainage control, or were abandoned facilities from some prior use. They are sometimes created merely by repeated driving over an area. Such roads are rarely, if ever, maintained and then only by users. These roads are single lane, usually with native surfacing, and sometimes passable with four-wheel drive vehicles only, especially in wet weather.

PRIMITIVE SETTING A large area (generally at least 5,000 acres) at least three miles from all roads, railroads, or trails with motorized use. The area is essentially a natural environment unmodified by man.

PRODUCTION POTENTIAL The capability of the land or water to produce life-sustaining features (forage, cover, aquatics).

PRODUCTIVITY See Site Productivity.

PROGRAM DEVELOPMENT AND BUDGETING The process by which activities for the Forest are proposed and funded.

PROPOSED ACTION In terms of the National Environmental Policy Act, the project, activity, or action that a Federal agency intends to implement or undertake and which is the subject of an environmental analysis.

PRUNING The removal of live or dead branches from standing trees.

PUBLIC ACCESS Usually refers to a road or trail route over which a public agency claims a right-of-way available for public use.

PUBLIC INVOLVEMENT A Forest Service process designed to broaden the information base upon which agency decisions are made by (1) Informing the public about Forest Service activities, plans, and decisions, and (2) Encouraging public understanding about and participation in the planning processes which lead to final decision making.

PUBLIC ISSUE A subject or question of widespread public interest identified through public participation relating to management of National Forest System lands.

RANGE ALLOTMENT A designated area of land available for livestock grazing upon which a specified number and kind of livestock may be grazed under a range allotment management plan. It is the basic land unit used to facilitate management of the range resource on National Forest System and associated lands administered by the Forest Service.

RANGE, TRANSITORY See Transitory Range.

RANGELAND Land on which the climax vegetation (potential natural plant community) is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing and browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain forb and shrub communities. It also includes areas seeded to native or adapted introduced species that are managed like native vegetation.

RANGER DISTRICT Administrative subdivision of the Forest supervised by a District Ranger.

RARE II See Roadless Area Review and Evaluation II.

REAL DOLLAR A monetary value that compensates for inflation.

RECEIPTS Money collected from timber stumpage, livestock grazing, campgrounds, special use permits, and oil and gas lease rentals and royalties, and returned to the federal treasury.

RECORD OF DECISION A document separate from but associated with an environmental impact statement that publicly and officially discloses the responsible official's decision on the proposed action.

RECREATION CAPACITY The number of people that can take advantage of a recreation opportunity at any one time without substantially diminishing the quality of the experience sought after.

RECREATION EXPERIENCE LEVEL A concept used in recreation management to delineate the range of opportunities for satisfying basic recreation needs of people. A scale of five experience levels ranging from "primitive" to "highly developed" is planned for the National Forest System.

RECREATION INFORMATION MANAGEMENT (RIM) The Forest Service system for recording recreation facility condition and use.

RECREATION LIVESTOCK USE The use of an area by animals, such as horses and mules, which are used primarily in conjunction with recreation activities.

RECREATION MANAGEMENT AREA An area of several thousand acres in which the management emphasis is on recreation and in which direction is given to establish a Recreation Area Management Plan.

RECREATION OPPORTUNITIES The combination of recreation settings, activities, and experiences provided by the Forest.

RECREATION OPPORTUNITY GUIDE A catalogue describing the recreation activities available on a particular Ranger District.

RECREATION OPPORTUNITY SPECTRUM (ROS) A system for planning and managing recreation resources that recognizes recreation activity opportunities, recreation settings, and recreation experiences along a spectrum or continuum.

RECREATION PREFERENCE TYPE (RPT) A term used to indicate the types of recreation experiences sought after by Forest users. They are overlapping portions of the total recreation preferences spectrum that the public may express demands for.

RPT I. Orientations toward using natural, unmodified environment for the appreciation and understanding of natural phenomena; as a source of intellectual and/or physical challenges; for seeking solitude; and for esthetic stimulations.

RPT II. Orientations toward using natural or semiprimitive environment in searching for and extraction of indigenous fish and/or game species, rocks, minerals, edible plants, etc., and for enjoyment of the physical surroundings in which such extractable objects are found.

RPT III. Orientations toward using semiprimitive, lightly developed areas for relaxing in natural surroundings; as a source of tranquility and freedom from tension; and for esthetic stimulation.

RPT IV. Orientation toward using moderately developed areas and surrounding environment for intentional social interaction and group learning experiences.

RPT V. Orientations toward using highly developed areas for social interactions with many other people and for pursuits which allow for the expression of learned physical abilities.

RECREATION RESIDENCE A house or cabin on National Forest System land for seasonal recreational use that is not the primary residence of the owner.

RECREATION TYPES Developed Recreation - The type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

Dispersed Recreation - That type of recreation use related to and in conjunction with roads and trails that requires few if any improvements and may occur over a wide area. Activities tend to be day-use oriented and include hunting, fishing, berrypicking, off-road vehicle use, hiking, horseback riding, picniking, camping, viewing scenery, snowmobiling, and many others.

RECREATION VISITOR DAY (RVD) One visitor day equals 12 hours (one person for 12 hours, or 12 people for 1 hour, or any combination thereof).

REDUCED-SERVICE MANAGEMENT The administration, operation and maintenance of developed recreation sites to established standards with the objective to meet minimum health and safety needs of the visitor and keep the site open to public use.

REFORESTATION The renewal of forest cover by seeding, planting, and natural means.

REGENERATION The renewal of a tree crop, whether by natural or artificial means. This term may also refer to the crop itself.

REGIONAL FORESTER The official responsible for administering a single Region of the Forest Service.

REGIONAL GUIDE A document developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides all natural resource management activities and established management standards and guidelines for National Forest System lands of a given Region to the Forests within a given Region. It also disaggregates the RPA objectives assigned to the Region to the Forests within that Region.

REGIONAL LAND AND RESOURCE MANAGEMENT PLAN The plan developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, that guides all natural resource management activities and established management standards and guidelines for the National Forest System lands of a given Region. It also disaggregates the RPA objectives assigned to the Region to the Forests within that Region.

REGULATED The commercial forest land that is organized for timber production under the principle of sustained yield. The harvest of timber from this land is regulated to achieve multiple long range objectives, such as maintaining setting for recreational activities, rotating forage production areas and wildlife habitat, increasing water production yield, and increasing the growth and utilization of timber for the Nation's supply.

REGULATIONS Refers to the Code of Federal Regulations for implementing the National Forest Management Act, 36 CFR, Part 219.

RENEWABLE RESOURCES Resources that are possible to use indefinitely, when the use rate does not exceed the ability to renew the supply, however, in the RPA program, the term is used to describe those matters within the scope of responsibilities and authorities of the Forest Service as required by the Forest and Rangeland Renewable Resouces Planning Act of 1974. Consequently, the renewable resources include: timber, range, minerals, wildlife and fish, water, recreation, and wilderness.

RENEWABLE RESOURCES ASSESSMENT An appraisal of the Nation's renewable resources that recognizes their vital importance and the necessity for long-term planning and associated program development. The Assessment meets the requirements of Section 3 of the Forest and Rangeland Renewable Resources Planning Act and includes analysis of present and anticipated uses, demands, and supplies of the renewable resources; a description of Forest Service programs and responsibilities; and a discussion of policy considerations, laws, and regulations.

RENEWABLE RESOURCES PROGRAM The program for management and administration of the National Forest System, for Research, for Cooperative State and Private Forest Service programs, and for conduct of other Forest Service activities in accordance with Section 4 of the Forest and Rangeland Renewable Resources Planning Act.

RESOURCE ALLOCATION MODEL A mathematical model using linear programing which will assign prescriptions to land areas and schedule implementation of those prescriptions simultaneously. The end purpose of the model is to find a schedule and prescription assignment that meets the goals of the Forest and optimizes some objective function such as "maximize PNV".

RESOURCE ELEMENT (SUPPORT ELEMENT) A collection of activities from the various operating programs required to accomplish the Forest Sevice mission and which fulfill statutory or Executive requirements. There are seven resource elements: Recreation, Wilderness, Wildlife and Fish, Range, Timber, Water, and Minerals.

RESEARCH NATURAL AREA An area in as near a natural condition as possible, which exemplifies typical or unique vegetation and associated biotic, soil, geologic, and acquatic features. The area is set aside to preserve a representative sample of an ecological community primarily for scientific and educational purposes; commercial and general public use is not allowed.

RETENTION (VQO) See Visual Quality Objectives (VQO).

RIGHT-OF-WAY Land authorized to be used or occupied for the construction, operation, maintenance, and termination of a project facility passing over, upon, under, or through such land.

RIPARIAN AREAS Areas with distinctive resource values and characteristics that are comprised of an aquatic ecosystem and adjacent upland areas that have direct relationships with the aquatic system. This includes flood plains, wetlands, and all areas within a horizontal distance of approximately 100 feet from the normal high water line of a stream channel, or from the shoreline of a standing body of water.

RIPARIAN ECOSYSTEM A transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. It is identified by soil characteristics and by distinctive vegetative communities that require free or unbounded water.

ROAD CREDITS Credits earned by timber purchasers and which are applied toward the sale price of timber in exchange for building the roads needed for access.

ROAD MAINTENANCE LEVELS Road maintenance levels are as follows:

Level 1: Basic custodial care as required to protect the road investment and to see that damage to adjacent land and resources is held to a minimum. The road is not normally open to traffic.

Level 2: Same basic maintenance as Level 1 plus logging out, brushing out, and restoring the road prism as neccessary to provide passage. Route markers and regulation signs are in place and useable. Road is open for limited passage of traffic, which is usually administrative use, permitted use, and/or specialized traffic.

Level 3: Road is maintained for safe and moderately convenient travel suitable for passanger cars. Road is open for public travel, but has low traffic volumes except during short periods of time (e.g. hunting season).

Level 4: At this level, more consideration is given to the comfort of the user. Road is usually surfaced with aggregate or is paved and is open for public travel.

Level 5: Safety and comfort are important considerations for these roads which are open to public traffic and generally receive fairly heavy use (100 Average Daily Traffic or more). Roads have an aggregate surface or are paved.

ROAD MANAGEMENT The combination of both traffic and maintenance management operations. Traffic management is the continuous process of analyzing, controlling and regulating uses to accomplish National Forest objectives. Maintenance management is the perpetuation of the transportation facility to serve intended management objectives.

ROADED NATURAL-APPEARING RECREATION SETTING A classification on the recreation opportunity spectrum where timber harvest or other surface use practices are evident. Motorized vehicles are permitted on all or parts of the road system.

ROADLESS AREA A National Forest area which (1) is larger than 5000 acres or, if smaller than 5000 acres, contiguous to a designated wilderness or primitive area; (2) contains no roads and (3) has been inventoried by the Forest Service for possible inclusion in the National Wilderness Preservation System.

ROADLESS AREA REVIEW AND EVALUATION (RARE) II A comprehensive process, instituted in June 1977, to identify roadless and undeveloped land areas in the National Forest System and to develop alternatives for both wilderness and other resource management.

ROTATION The planned number of years between the formation or generation of trees and their harvest at a specified stage of maturity.

ROUNDWOOD The volume of logs or other round products required to produce lumber, plywood, woodpulp, paper, or other similar products.

RPA See Forest and Rangeland Renewable Resources Planning Act of 1974

RURAL RECREATION SETTING A classification on the recreation opportunity spectrum that is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high.

SALE SCHEDULE See Base Sale Schedule.

SALVAGE HARVEST The cutting of trees that are dead, dying, or deteriorating (e.g., because they are overmature or materially damaged by fire, wind, insects, fungi, or other injurious agencies) before they lose their commercial value as sawtimber.

SANITATION HARVEST The removal of dead, damaged, or susceptible trees, essentially to prevent the spread of pests or pathogens and so promote forest hygiene.

SAWTIMBER Trees containing at least one 12-foot sawlog or two noncontiguous 8-foot logs, and meeting regional specifications for freedom from defect. Softwood trees must be at least 9 inches in diameter and hardwood trees 11 inches in diameter at breast height.

SCENIC EASEMENT A legal interest in the land of another which allows the easement holder specified uses or rights without actual ownership of the land; in this case, control of the use of land adjacent to public highways, parks, and rivers. It may provide something attractive to look at within the easement area, an open area to look through to see something attractive beyond the easement itself, or a screen to block out an unsightly view beyond the easement area.

SCOPING PROCESS An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the proposed action. Identifying the significant environmental issues deserving of study and deemphasizing insignificant issues, narrowing the scope of the environmental impact statement accordingly. (Ref. CEQ requlations, 40 CFR 1501.7).

SEDIMENT Solid material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by air, water, gravity, or ice.

SEED TREE CUTTING The removal in one cut of most of the mature trees from an area, leaving only a small number of desireable trees to provide seed for regeneration.

SEEDLING/SAPLING A size category for forest stands in which trees less than 5 in. in diameter are the predominant vegetation.

SEISMIC EXPLORATION Seismic exploration is used to map underground geological features to obtain information on the earth's subsurface and to locate areas where accumulations of oil and gas might occur.

Seimic waves, generated at or near the surface, penetrate the earth's crust and reflect from subsurface rock layers back to the surface. The geophysicist receives a printed record or seismograph from which is measured the depth to various strata and from which subsurface structures with a potential for oil and gas accumulation can be determined such as faults, anticlines, and folds.

Portable - Where access limitations, topography, or other restraints prevent use of trucks, portable operations can be performed. Two portable techniques exist for collecting data. These are:

(1) Surface charge programs involve the detonation of a series of as much as 50 to 100 pounds of explosives at shot points located at intervals along the seismic line. Surface charges can be placed directly on the ground, on snow, or on a variety of stakes or platforms. All necessary equipment to conduct the operation is transported by helicopters and then conveyed by foot travel.

(2) Various kinds of portable drills can be backpacked or delivered by helicopter to the area. A shallow subsurface portable program would involve drilling a pattern of approximately 16 holes about 4 inches in diameter up to 50 feet deep per mile of line. At this depth, a 10 to 40 pound charge of explosive is placed and detonated. Recording cables and geophones are laid out by foot travel.

With both of these portable techniques, shock waves generated by detonation are received and transmitted via geophones and cable to a recording device. Portable methods are generally used on the Forest.

Conventional - The conventional method of collecting seismic data includes the use of truck-mounted drills and vehicle-supported crews and generally involves off-road travel. This technique involves drilling 5 to 18 5-inch diameter holes per mile to a depth of 180 to 200 feet. At this depth, a 10 to 100 pound explosive charge is placed and detonated. Shock waves are received and transmitted via geophones and cable to a truck-mounted recording device. Due to terrain restrictions, this method has limited application on the Forest.

Vibroseis - The vibroseis technique involves using truck-mounted hydraulic pads which generate energy waves through vibration rather than explosives. The vibrator method typically consists of four large trucks each equipped with a vibrator (a steel slab weighing about three tons) mounted between the front and back wheels. The vibrator pads (about 4 feet square) are lowered to the ground and vibrators on all trucks are triggered electronically from the recorder truck. Energy waves are received and transmitted via cable and geophones to a recorder truck. After the information is recorded, the trucks move forward a short distance and the process is repeated. The vibroseis operation is usually limited to roads and gentle terrain.

SELECTION CUTTING The annual or periodic removal of trees as part of an uneven-age silvicultural system. Cutting can involve individual trees or small groups of trees to meet a predetermined goal of size and species composition in the remaining stand.

SEMIPRIMITIVE RECREATION SETTING A classification on the recreation opportunity spectrum that characterizes a predominately natural or natural-appearing environment of a moderate to large size. Concentration of users is low, but there is often evidence of other area users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but are subtle.

SENSITIVE SPECIES Those plant or animal species which are susceptible or vulnerable to activity impacts or habitat alterations.

SEQUENTIAL BOUNDS A set of constraints used in linear program models to establish the relationship of the quantity of an output to preceding and succeeding quantities of that output (e.g. the forage production in one time period cannot increase or decrease over ten percent from the forage production of the previous time period).

SERAL A biotic community which is developmental; a transitory stage in an ecologic succession.

SHELTERWOOD CUTTING The removal of a stand of trees through a series of cuttings designed to establish a new crop with seed and protection provided by a portion of the stand.

SILVICULTURAL EXAMINATION The process used to gather the detailed in-place field data needed to determine management opportunities and direction for the timber resource within a small subdivision of a forest area such as a stand.

SILVICULTURAL SYSTEMS A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. It includes all cultural management practices performed during the life of the stand such as regeneration cutting, fertilization thinning, improvement cutting, and use of genetically improved tree seeds and seedlings to achieve multiple resource benefits. Systems are classified according to the method of carrying out the fellings that remove the mature crop and provide for regeneration and according to the type of Forest they produce.

SITE PREPARATION A general term for a variety of activities that remove competing vegetation, slash, and other debris that may inhibit the reforestation effort.

SITE PRODUCTIVITY Production capability of specific areas of land.

SLASH The residue left on the ground after felling and other silvicultural operations and/or accumulating there as a result of storm, fire, girdling, or poisoning of trees.

SMALL GAME Birds and small mammals normally hunted or trapped.

SNAG A standing dead tree usually greater than 5 feet in height and 6 inches in diameter at breast height.

SOCIAL ORGANIZATION The structure of a society described in terms of institutions, community cohesion, and community stability.

SOCIAL VARIABLE A variable that measures the social impact of Forest Service management alternatives. Examples include population statistics, types of institutions, and personal opinion as reflected in attitudes or as demonstrated by behavior.

SOIL PRODUCTIVITY The capacity of a soil to produce a specific crop such as fiber and forage, under defined levels of management. It is generally dependent on available soil moisture and nutrients and length of growing season.

SPECIAL-USE PERMIT A permit issued under established laws and regulations to an individual, organization, or company for occupancy or use of National Forest System land for some special purpose.

STAGNATION A condition where plant growth is markedly reduced or even arrested through; e.g., competition, state of the soil, or disease.

STAND A community of trees or other vegetative growth occupying a specific area and sufficiently uniform in composition (species), age, spatial arrangement, and conditions as to be distinguishable from the other growth on adjoining lands, so forming a silvicultural or management entity.

STANDARD AND GUIDELINE An indication or outline of policy or conduct.

STIPULATIONS Requirements that are part of the terms of a mineral lease. Some stipulations are standard on all Federal leases. Other stipulations may be applied to the lease at the discretion of the surface management agency to protect valuable surface resources and uses.

STOCKING A measure of timber stand density as it relates to the optium or desired density to achieve a given management objective.

STREAM ORDER A measure of the position of a stream in the hierarchy of tributaries. (Stream as referenced here refers to perenniel streams.)

a. First-order streams are unbranched streams, that is they have no tributaries.

b. Second-order streams are formed by the confluence of two or more first-order streams. They are considered second-order until they join another second-order or larger stream.

c. Third-order streams are formed by the confluence of two or more second-order streams. They are considered third-order until they join another third-order or larger stream.

SUBDIVISIONS Areas of previously undeveloped land divided into individual homesites and/or blocks of lots with streets or roads and open spaces.

SUCCESSIONAL STAGE A phase in the gradual supplanting of one community of plants by another.

SUITABILITY The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices.

SUITABILITY ANALYSIS Process of identifying National Forest System lands to be managed for timber production. Stage I identifies the biologically capable, administratively available, and technically suitable lands. Stage II consists of an economic analysis of costs and benefits of timber management on the lands identified in Stage 1. Stage III provides the final assignment of suitable lands based on Forest objectives and economic efficiency.

SUITABLE FOREST LAND Forest land (as defined in CFR 219.3) for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions; for which there is reasonable assurance that such lands can be adequately restocked (as provided in CFR 219.14); and for which there is management direction that indicates that timber production is an appropriate use of that area.

SUPPLY The amount of an output that producers are willing to provide at a specific price, time period, and conditions of sale.

SUPPORT ELEMENT A collection of major Forest Service activities which complement the resource elements. There are five support elements: Protection, Lands, Soils, Facilities, and Rural Community and Human Resources.

SUPPRESSION (FIRE SUPPRESSION) Any act taken to slow, stop, or extinguish a fire. Examples of suppression activities include fireline construction, backfiring, and application of water or chemical fire retardants.

SUSTAINED YIELD The achievement and maintenance in perpetuity of a high level annual or regular periodic output of the various renewable resources of the National Forest without impairing the productivity of the land.

SYSTEM ROADS See Forest System Road.

TARGET A quantifiable output assigned to the Forest.

TEMPORARY ROAD Those roads needed only for the purchaser or permittee's use. The Forest Service and the purchaser or permittee must agree to the location and clearing widths. Temporary roads are used for a single, short-term use; e.g to haul timber from landings to Forest development roads, access to build water developments, etc..

TENTATIVELY SUITABLE FOREST LAND Forest land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions. There is reasonable assurance that such lands can be adequately restocked as provided in CFR 219.13(h)(3).

THERMAL COVER Cover used by animals to ameliorate chilling effects of weather; for elk, a stand of coniferous trees 40 feet or taller with an average crown closure of 70 percent or more.

THREATENED AND ENDANGERED SPECIES Any species, plant of animal, which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its' range. Threatened species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act.

THREE-STEP SHELTERWOOD An even-aged silvicultural system in which the old crop (the shelterwood) is removed in three successive cuttings in order to provide a source of seed and/or protection for regeneration.

TIERING Refers to the elimination of repetitive discussions of the same issue by incorporating by reference the general discussion in an environmnetal impact statement of broader scope. For example, a project environmental assessment could be tiered to the Forest Plan EIS.

TIMBER A general term for the major woody growth of vegetation in a forest area.

TIMBER HARVEST SCHEDULE The quantity of timber planned for sale and harvest by time period, usually a decade, of the Forest Plan. The first period, usually a decade, of the selected harvest schedule provides the allowable sale quantity. Future periods are shown to establish that sustained yield will be achieved and maintained.

TIMBER BASE The lands within the Forest that are suitable for timber production.

TIMBER PRODUCTION The purposeful growing, tending, harvesting, and regeneration of rotational crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. For purposes of Forest planning, timber production does not include production of fuelwood or harvest from unsuitable lands.

TIMBER STAND IMPROVEMENT (TSI) All noncommercial intermediate cuttings and other treatments to improve composition, condition, and volume growth of a timber stand.

TRAILHEAD The parking, signing, and other facilities available at the terminus of a trail.

TRANSITORY RANGE Land that is suitable for grazing use for a period of time. For example, on particular disturbed lands, grass may cover the area for a period of time before being replaced by trees or shrubs not suitable for forage.

TREE OPENING An opening in the Forest cover created by the application of even-aged silvicultural practices. The Northern Regional Guide established size limitations and guidelines to determine when cut areas are no longer considered openings.

TRESPASS The act of going on another's land or property unlawfully.

TWO-STEP SHELTERWOOD An even-aged silvicultural system in which the old crop (shelterwood) is removed in two successive cuttings in order to provide a source of seed and/or protection for regeneration.

UNDERSTORY The trees and other woody species which grow under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

UNEVEN-AGED MANAGEMENT The application of a combination of actions needed to simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection.

Individual Tree Selection Cutting - The removal of selected trees from specified size and age classes over the entire stand area in order to meet a predetermined goal of size or age distribution and species composition in the remaining stand.

Group Selection Cutting - The removal of small groups of trees to meet a predetermined goal of size distribution and species in the remaining stand.

UNREGULATED HARVEST This harvest is not charged against the allowable sale quantity. It includes occasional volumes removed that were not recognized in calculations of the allowable sale quantity, such as cull or dead material and noncommercial species and products. It also includes all volume removed from unsuitable areas. Harvests from unsuitable areas will be programed as needed to meet multiple-use objectives other than timber production and for improvement of administrative sites.

UNSUITABLE TIMBER LAND Lands not selected for timber production in Step II and III of the suitablility analysis during the development of the Forest Plan due to (1) the multiple-use objectives for the alternative preclude timber production, (2) other management objectives for the alternative limit timber production activities to the point where management requirements set forth in 36 CFR 219.27 cannot be met, and (3) the lands are not cost-efficient over the planning horizon in meeting forest objectives that include timber production. Land not appropriate for timber production shall be designated as unsuitable in the Forest Plan.

UTILITY CORRIDOR See Corridor

UTILIZATION STANDARDS Standards guiding the use and removal of timber. They are measured in terms of diameter at breast height (d.b.h.) and top of the tree inside the bark (top d.i.b.) and the percentages of "soundness" of the wood.

VALUE, MARKET The unit price of an output normally exchanged in a market after at least one stage of production, expressed in terms of what people are willing to pay as evidenced by market transactions.

VALUE, NONMARKET The unit price of an output not normally exchanged in a market after at least one stage before consumption, and thus must be imputed from other economic information.

VEGETATION TREATMENT Any activities undertaken to modify the existing condition of the vegetation.

VIABLE POPULATION A population which has adequate numbers and dispersion of reproductive individuals to ensure the continued existence of the species population in the planning area.

VISITOR INFORMATION SERVICE (VIS) SITE A site which provides interpretative information, (directional, historical, statistical) located at Forest historical sites, overlook sites, or special interest areas.

VISUAL QUALITY OBJECTIVE (VQO) A desired level of scenic quality and diversity of natural features based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations of the characteristic landscape.

Preservation: In general, human activities are not detectable to the visitor.

Retention: Human activities are not evident to the casual Forest visitor.

Partial Retention: Human activities may be evident, but must remain subordinate to the characteristic landscape.

Modification: Human activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in middle-ground or background.

Maximum Modification: Human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

Enhancement: A short-term management alternative which is done with the express purpose of increasing positive visual variety where little variety now exists.

VISUAL RESOURCE The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

WALLOW A depression, pool of water, or wet area produced or utilized by elk or moose during the breeding season.

WATER YIELD The measured output of the Forest's streams.

WATER YIELD INCREASE Additional water released to the Forest streams as a result of Forest management activities.

WEEDING Generally a cultural operation eliminating or suppressing undisturbed vegetation, mainly herbaceous, during the seedling stage of a forest crop, thus reducing competition with the seedling stand.

WET AREAS Sites, often occurring at the heads of drainages, such as wet sedge meadows, bogs, or seeps. They are often referred to as "moist sites" and are very important components of elk summer range. Sites near water are important because the forage they produce is highly nutritious and heavily utilized by elk.

WETLANDS Those areas that are inundated by surface or ground water with a frequency sufficient, under normal circumstances, to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands include marshes, bogs, sloughs, potholes, river overflows, mud flats, wet meadows, seeps, and springs.

WILDERNESS Federal land retaining its primeval character and influence without permanent improvements or human habitation as defined under the 1964 Wilderness Act. It is protected and managed so as to preserve its natural conditions which (1) generally appear to have been affected primarily by forces of nature with the imprint of man's activity substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and confined type of recreation; (3) has at least 5,000 acres or is of sufficient size to make practical its preservation, enjoyment, and use in an unimpaired condition, and (4) may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest.

WILDERNESS STUDY An analysis to determine an area's appropriateness, cost, and benefits for addition to the National Wilderness Preservation System.

WITHDRAWAL An order removing specific land areas from availability for certain uses.

WORK YEAR EQUIVALENTS This is 2,087 working hours. May be accomplished by one person EQUIVALENTS working yearlong or several people filling seasonal positions.

YARDING The operation of hauling timber from the stump to a collecting point.

ZONE OF INFLUENCE A delineated geographic area within which the present and proposed actions exert an important influence on residents and visitors.

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